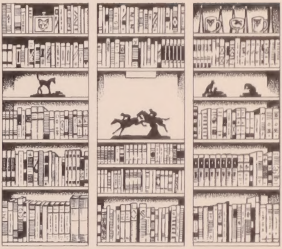

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JOHN AND MARTHA DANIELS

FRANK FORESTER'S

FISH AND FISHING.

FRANK FORESTER'S

FISH AND FISHING

OF THE

UNITED STATES,

AND

BRITISH PROVINCES OF NORTH AMERICA.

BY

HENRY WILLIAM HERBERT,

Author of "The Field Sports of the United States and British North America," "Frank Forester and his Friends," &c.

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TO

FRANCIS SURYET, ESQ.,

OF NATCHEZ, MISSISSIPPI,

THIS WORK, ON THE FISH AND FISHING OF NORTH AMERICA,

Is Dedicated,

BOTH AS TO AN ARDENT AND INTELLIGENT SPORTSMAN, AS WELL AS TO A TRIED FRIEND,

BY HIS FRIEND AND SERVANT,

FRANK FORESTER.

THE CEDARS,
August 14, 1849.

ADVERTISEMENT.

In offering this Work to the public, I have little to say, as its character speaks for itself, but to indicate the sources of the information which it contains, and to give credit to those who by their works, letters, or conversation have aided me in its execution.

And firstly, I must express my sincere gratitude to my friend, Professor Agassiz, who kindly afforded me every assistance in his power, with free access to his fine library and unrivalled collection of fishes, from which most of my drawings are taken. To my friend Mr. Perley of St. John's, I am indebted for much valuable and interesting information in regard to the Fish and Fisheries of New Brunswick and Nova Scotia; and to Mr. Deblois of Portland, for a communication respecting the Great Trout of Sebago Lake in Maine, which was probably a distinct variety, though the fact cannot be easily now ascertained, the noble fish being, alas! extinct.

To Mr. Yarrell's fine work on "British Fishes," to Hofland's "British Angler's Manual," to Richardson's "Fauna Boreali-Americana," and to Dekay's "Fishes of New York," I thankfully record my acknowledgments.

All the wood engravings were drawn by myself on the wood, either from the fishes themselves or from original drawings in the possession of Professor Agassiz, lent to me for that purpose, with the exception of the true Salmon, which is copied from his beautiful work on the "Fresh-Water Fishes of Europe:" of the Arctic Charr or Masamacush and the Arctic Grayling, (which are taken from Richardson's "Fauna Boreali-Americana)"; of the Salmon Trout, taken from Yarrell; and of the Lake Trout and Pike Perch, taken from Dekay's "Fauna of the State of New York."

With these brief remarks I submit the following pages, to the courtesy and candour of the Gentle Craft, and of the public in general, and once again subscribe myself,

Their friend and servant,

FRANK FORESTER.

THE CEDARS,
August 14, 1849.

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FRANK FORESTER'S

FISH AND FISHING.

INTRODUCTORY REMARKS.

TO DEAL with a subject so wide as the FISH and FISHING of an extent of country greater than the whole of Europe, stretching almost from the Arctic circle to the Tropics, from the waters of the Atlantic to those of the Pacific Ocean, may seem, and indeed is, in some respects, a bold and presumptuous undertaking. It were so altogether, did I pretend to enter into the natural history of all, or even of one-hundredth part, of the fish peculiar to this continent and its adjacent seas.

Such, however, is by no means my aim or intention. I write for the sportsman, and it is therefore with the Sporting Fish only that I propose to deal; as, in a recent work on the Field Sports of the same regions, it was with

the Game Animals only that I had to do. In the prefatory observations of that work, I endeavoured to make myself understood as to what constitutes *Game*, in my humble opinion, as regards animals of fur and feather. I did not, it is true, expect, or even hope, to suit the views and notions of everybody, particularly when I looked to the great variety of soils, regions, and climates, for the inhabitants of which I was writing; and to the extreme latitude and laxity of ideas concerning sportsmanship which prevail in this country.

One would suppose it was sufficiently evident, that a work of the magnitude of the "Universal Encyclopædia," and nothing short of that, would suffice to give an elaborate essay and disquisition on every separate sort of sport, which every separate individual, of every separate State in the Union, may think proper to practise for his own pleasure or profit.

I therefore determined to confine myself, in the first place, to those sports only which are truly Field Sports in the highest acceptation of the term, and which are established as such by the consent of genuine sportsmen.

In the second place, I restricted myself to those sports which are purely and peculiarly American, and which, as such, are not treated of at all, or, if at all, understandingly, by European writers.

The natural history, the generic distinctions, the migra-

tions, habits, haunts, seasons, and the mode of pursuing and taking, in the most artistical and sportsman-like manner, of such animals as are peculiar to this continent, which have never been a subject of investigation to the sporting naturalist, seemed to me to afford a topic interesting and agreeable to the writer, and not devoid of some pretension toward entertaining, and perhaps instructing, the general reader.

At the same time, neither pretending nor hoping to make my work *perfect*, I thought proper to exercise my own judgment in deciding what species of sports are to be regarded as Field Sports at all, what as American Field Sports, and what as requiring description, analysis, or explanation.

Some men consider the shooting of migratory thrushes, and golden-winged woodpeckers—which it pleases them to call robins and high-holders,—as well as small song-birds in general, as a Field Sport; I do not.

Many men—I might say, of the rural parts of the Eastern and Middle States, *most* men—consider squirrels, raccoons, opossums, ground-hogs, and such like vermin, as being Game; I do not. Therefore, I dealt not with any of these, nor apologise for not dealing with them.

Again. Fox-hunting on horseback, in a well-fenced arable, or pasture country, is the finest of all Field Sports, beyond a question. But the facts, that one pack of fox-

hounds is now kept at Montreal, that another was kept a few years since by the members of the British legation at Washington, and that a few planters, in two or three Southern States, amuse themselves occasionally and irregularly by fox-hunting, do not constitute fox-hunting an American Field Sport ; which it is not ; as is demonstrated by the undeniable fact, that there are not above three States out of thirty, more or less, in which the fox is pursued as anything but vermin.

There are, moreover, many reasons which render it almost impossible that fox-hunting ever shall become an American Field Sport. In the Northern and Eastern States, where only, as a general rule, the country is sufficiently cleared of timber to allow of this pursuit in perfection, the severity of the winter, and the jealousy of farmers in regard to trespass on their lands, and the breaking of their fences, combine to render it impracticable. In the Southern States, the woodland character of the country, and the frequency of swamps, bayous, and similar obstacles, destroy all its peculiar excellences, and detract infinitely from its excitement, and its scientific character.

Yet once more. Had fox-hunting been, what it is not, an American Field Sport, I should still have dismissed it in a few pages. Because, being a sport thoroughly understood, and carried to the utmost perfection in the Old

World ; a sport, so far as it is one here at all, perfectly identical on the two sides of the Atlantic, and as such, having no peculiarities, and requiring no new precepts here ; and, above all, being a sport on which more able and excellent treatises have been written than on any other in the whole range of sporting subjects, and that by such men as Beckford and Nimrod—names as familiar as household words to all who can sit a horse or halloo to a hound —it would have been an act, if not of impertinence, at least of total supererogation, to fill up the pages of a work devoted to a new class of subjects, with trite remarks on an old one, or with quotations from books within the reach of every sportsman.

All this which I have here set down in relation to my work on Field Sports, and to some strictures which have been made upon it, is simply explanatory of my intentions with regard to this work.

These are to furnish what information I can in relation to the classes, migrations, habits, breeding seasons, and the modes of taking, of those which I call and consider Sporting or Game Fishes ; to insist on the generic distinctions, and the true names and definitions of the various species and families ; to show briefly how the various families and classes may be distinguished one from the other, thereby enabling sportsmen to avoid the constant errors and blunders into which they are now falling in the confusion

of distinct varieties and orders; and putting it in their power, by the accurate observance, and correct recording, of a few simple signs, to render invaluable service to the cause of science, in one of the most important, and the least understood, of its branches.

And, before I proceed farther, I shall beg gentlemen from remote sections of the North, East, West, and South, not to wax wrathful and patriotically indignant, nor to reclaim fiercely against the author of this work, because they fail to find therein described some singular local mode of capturing some singular specimen of the piscine race known in their own districts, and there regarded as a Sporting Fish, but unknown as such to the world at large.

Some gentlemen, doubtless, regard bobbing for eels, and bait-fishing through holes cut in the ice; others, hauling up sharks with ox-chains and tenter-hooks; and others, yet, harpooning garpikes, as excellent sport, and as scientific fishing; as many more will probably deem of hauling the seine, or fishing with the set-line, or the deep-sea line. None of these things come under my ideas of fair or sporting fishing; and the gentlemen who admire these and similar practices, I beg leave to premonish that they will be surely disappointed if they peruse the pages of this work. By omitting to do so, therefore, they will spare themselves a displeasure, and the author an animadversion.

Fresh-water fishing especially is its subject. Lakes, estuaries, rivers, brooks, its scene ; and the Salmon, in all its varieties, the Pike, the Bass, and the Perch, the fish with which it will principally deal. All Game Fish will, however, find a place in its pages ; all those, I mean, which can be, and usually are, taken with the rod and reel ; nor will a few pages be denied to deep-sea fishing ; and to the consideration of some of the finny tribe which visit our rivers and shores, and which, from various causes, such as peculiarity of habit, singularity of structure, excellence on the table, or the like, may appear worthy of a passing notice, although not coming strictly within the sportsman's category of Game Fishes.

All the modes of rod-fishing will be treated of in their places ; but fly-fishing, spinning with the live, and trolling with the dead, bait, more especially will be discussed ; as, for my own part, I regard these as the only true and sportsmanlike modes of operation. Bottom-fishing, ground-baiting with the float and sinker, and the like, are doubtless all very well in their way ; and will perhaps, in many instances, even with Sporting Fishes, be found the most killing, as they are clearly the easiest methods ; while, with other varieties, they are the only modes that can be adopted ; still they are to fly-fishing, or spinning the minnow, what shooting sitting is to shooting on the wing ; and the fisher who is proud of lugging out of their native

element twenty trout by main force, aided by a lob-worm or roe-bait, stands in the same relation to him who baskets his three or four brace with the artificial fly and single gut artistically cast, as the gunner who pot-hunts his bagful of birds, trecing his ruffed grouse, and butchering his quail in their huddles on the ground, does to the crack shot, who stops his cock in a blind brake, with the eye of faith and the finger of instinct, or cuts down his wild-fowl, skating before the wind at the rate of a mile a minute, deliberately rapid and unerring.

THE

GAME FISH OF NORTH AMERICA.

By Game Fish, we understand all those which will take the natural or artificial bait with sufficient boldness and avidity, and which, when hooked, are endowed with sufficient vigour, courage, and rapidity of motion, to offer so much resistance, and give so much difficulty to the captor, as to render the pursuit exciting and agreeable, apart from any consideration of the intrinsic value of the fish.

By these qualities of the hooked fish, corresponding qualities of the fisherman are called forth; and the greater the wariness and cunning of the fish before he takes the bait, compelling the use of the finest and most delicate tackle, the greater his fury, vehemence, and velocity after being struck, requiring the utmost nicety of manipulation, coolness of temper, and promptitude of judgment, the higher does he stand in the list of game, and the more animating is his pursuit and capture.

The truth is, that in all field sports, the pleasure to be derived from them, and the rank in which they stand one to the other, are all in exact proportion, not with the value or the numbers of

the victims, but with the difficulty of the capture, and the degree of skill, science, courage, or endurance, called forth in the act of taking.

Were this not so, shooting small birds baited with grain about a barn-door during a snow-storm, or scooping mackerel and herring out of their schulls by buckets-full at a time, would be a higher pursuit and better sport than shooting quail and woodcock on the wing over well-broke dogs, or killing a thirty pound Salmon with the slender gut and artificial fly.

And so they are better sport to the schoolboys and snobs who practise them, and who, lacking entirely the art, the energy, and the perseverance necessary to success in the true Field Sports, are perfectly content with arriving at the bad eminence of pot-gunners and ground-fishers; and then, presuming on their paltry numerical success, affect to undervalue, as profitless, the art which they cannot attain.

It is the wariness, the subtlety, and the caution of the Salmon, rendering it necessary to use materials of the slenderest and most delicate nature, and to apply them with the utmost nicety, which makes the triumph over him so far more enthralling to the real fisherman than that over the Pickerel or Mascalonge of equal weight, whose greater voracity and inferior intellect permits the use of a gimp foot-length, and a silken or flaxen line, instead of the fine gut tinctured to the very colour of the water, and the casting-line of almost invisible minuteness.

The same is the superiority of rod and reel fishing to the use of the hand-line, whether in trolling or in deep-sea fishing; because in both these the sport is at an end, so soon as the fish is hooked; it being a mere question of brute strength whether

the victim shall be conquered or not, when once fast at the end of a line capable of pulling in a yearling bullock.

On the contrary, it is not the wariness and cunning, but the vigour, the speed, the fierce courage, and determined obstinacy of the true Salmon, the Brook Trout, when of fine size and well fed, the various kinds of larger Pike or Pickerel, the Bass, and some others, which gives such a zest to their capture, as compared with the smaller and duller fish, which may be pulled out as fast as a hook can be baited and thrown in; or the larger and more torpid fish, such as the Lake Trout, the Carp, and the Perches, some of which, after a single boring plunge, resign themselves almost without a struggle, and are mastered with no resistance save that occasioned by their own dead weight.

I have said, above, that it is upon these qualities of boldness and fierceness, combined with wariness in biting, and of vigour and determination in resistance, apart from any intrinsic value of the fish, or excellence of his flesh, that his rank for gameness must depend.

It is remarkable, however, that all those fish which are the most game, the boldest, the strongest, the bravest, and the most obstinate, are invariably the finest also for culinary purposes, and the most highly appreciated by the gourmet on the board, as well as by the fisherman in the river or the mere.

With very few exceptions, the Game Fish are those which do not confine themselves either to salt or fresh water, throughout the year, but visit the one or the other, as their habits and tastes, but principally the propagation of their species, direct them. These migratory fish are, without any exception, the strongest, the boldest, and, as such, afford the best sport of

their tribe; nor are they, for the most part, to be surpassed by any in excellence, firmness, and flavour, when in their best condition.

Those fish which never visit the salt water at all, are unquestionably so much inferior to others of their own family which run periodically to the sea, that they are with difficulty recognised as belonging to the same order with their roving brethren; while of those, none of which are known to leave the fresh water, but two or three kinds are worth taking at all; and even these are not to be compared with the migratory, or the pure sea fish.

All excellence is, of course, in some degree comparative, and I am well aware that in the interior of the country, where sea fish are unknown, and where the culinary science is merely in a rudimental state, many fish are deemed excellent; and are sought out as dainties, simply because they are better than the ordinary tenants of the same waters; while in any place, where they could be considered in regard to the commonest sea fish, they would be entirely disregarded, and sold, if at all, as among the cheapest and most worthless articles of human food.

In the same way, many species of game, both of fur and feather, are highly regarded in districts where markets are rare, and well-fed and tender butchers' meat unknown; and in such places you will find many tasteless and inferior birds and animals highly valued, which in cities, where a variety of flesh and fowl is daily to be procured, where poultry and butchers' meat can always be had, both fat and tender, no person of ordinary taste or judgment in the art of eating would allow to come upon his table.

These few observations I premise in this place, because I foresee, distinctly, that my remarks will be animadverted upon, more or less severely, by the inhabitants of those districts in which the varieties of fish, which I regard as almost worthless, prevail; the same thing having occurred with regard to my work on Field Sports, concerning which gentlemen have waxed unwisely indignant as regards this or that bird, or this or that way of cooking it, when they have plainly lacked the means of drawing the requisite comparison.

But to proceed, the Game Fish of this country may be divided, first, into two general classes, of fresh and salt-water fishes; and these may be again subdivided, each, into other two, the fresh, as migratory and non-migratory; the salt, as into deep-sea, and shoal-water; although, perhaps, to speak with perfect precision on the subject, no deep-sea fish should be called a Game Fish. Very many persons, are, however, greatly addicted to the sport of making excursions from our large cities to the various sea-banks, for the purpose, it is true, of enjoying the sea breeze, and the excitement of the sail, combined with the attractions of the chowder or the clam-bake, the champagne and the cotillion, which are wont to complete the day's amusement, but still with the object of fishing likewise; and these persons, even if their sport be not of the loftiest or most sporting character, will reasonably expect to find some account of a favourite pursuit.

Nor, in very truth—though I eschew large congregations of humanity for sporting purposes, deeming them rather social and convivial in their true character, and holding sociality and conviviality, though excellent things in their way, as utterly averse

to the spirit of sportsmanship—have I not found it good sport, at times, to sally out from some sequestered fishing hamlet, in the trim schooner or more humble yawl, and try my fortune with the Cod, the Haddock, and the Halibut; or if, perchance, on the rocky shores of Eastern New England, with the delicate and lively Whiting, too little known, as yet, to the epicures of America, although surpassed in excellence by few, if any, of his race. With deep-sea fishing I shall deal, therefore, although briefly, as becomes its rank in proportion with the more exciting and scientific branches of the piscatory art; nor will the shoal-water, or bay and estuary fishing, as they are practised along our coasts, occupy so many pages, as will appear proportionate to the number or excellence of the species taken in that sport. Many of these are delicious fish on the table; but the sport of taking them consists, principally, in the frequency of their biting; and the skill requisite for their capture lies mainly in the knowing the most favourable bottom-grounds, the state of the tides and eddies most propitious to success, and the most killing baits at various seasons.

In throwing out and drawing in the bait, there is, comparatively speaking, small science; and taking the fish, when once hooked, little skill and small judgment; temper, and a moderate degree of patience alone seem needful.

It is not, indeed, to be denied that in this, as in all other ground-bait and bottom-fishing, an old experienced angler shall take many times more fish than the tyro sitting alongside of him in the same boat, and working with apparatus precisely similar, and baits identical.

This is, however, to be attributed much to practice and habit;

much to watchful observation of minutiæ, such as the foulling of the line, the correct depth of the plummet or sinker, and such like, and more to delicacy of hand in feeling, appreciating, and humouring the victim, when coquetting and nibbling about the bait. It cannot be likened to the skill exerted in casting and managing the fly, or the spinning minnow; much less to the playing, killing, and basketing the heaviest kind of fish with the lightest running tackle.

It must be acquired by habit and practice, if it be thought worth the trouble of acquisition, but it can scarcely be taught at all by instruction or example; and written precepts to this end would be altogether worthless, as they would be dull and unamusing.

I shall now proceed to the enumeration of the Game Fishes of the United States and British Provinces of North America, according to my understanding of their game qualities — regarding them, first, under their great divisions of fresh and salt-water fish; then as migratory or non-migratory, and deep-sea or shoal-water.

And here I shall observe that I adopt these grand divisions as paramount to the natural distinctions of genera, families, and the like, as I conceive that such a treatment of my subject will be most conducive to the pleasure and advantage of sportsmen, for whose benefit I especially write; while the naturalist will find that, subject to these divisions, he will recognise all his old acquaintances, and perhaps encounter some new ones, under the generic and specific divisions and definitions to which he has been accustomed. All the Game Fish of this country belong to a few well-marked families; and with the sole excep-

tion of a few deep-sea fish, are included in two large classes of abdominal *Malacopterygii*, or *Acanthopterygii*; the first class being those which have all the fin-rays soft and flexible; and the second, those which have a part of the fin-rays hard and spiny, as is the case with the Perch and the Bass, besides some others.

The deep-sea fish, to which I have alluded as coming under a third class, are the sub-brachial *Malacopterygii*, which have a different arrangement of the fins, although they have the soft and flexible fin-rays, in lieu of spines, as in the first class named. To this class belong the Cod, Haddock, Whiting, and such other of the deep-sea fish, especially Flat-fish, as can, by any extension of the term, be allowed to figure as Game Fish; for, under this head, I cannot by any means include the Ray, the Skate, or the Lampreys, which come under the same class with the Sharks (*Chondropterygii*) or cartilaginous fishes, the skeletons of which are not, as in the *Malacopterygii* or *Acanthopterygii*, composed of bone, but of cartilaginous or gristly matter. The Eel, which is not a Game Fish, is of the class *Malacopterygii*, but with a different arrangement of fins, which gives him the title of *Apodal*. He hardly deserves notice at all, unless as an article of food, and if mentioned, will be kept aloof from the others.

Of these two great generic divisions, then, are all the fresh-water fishes, more or less distinct, families; and all the shoal-water sea fishes likewise, with which we have to do; nor is there any line to be drawn as regards the migratory or non-migratory fishes, some of these belonging to each of these two great classes.

It will be well to observe here, that I consider all those fish which run up rivers and streams into the fresh water, for the purpose of spawning, which pass a considerable portion of the year, and are principally, if not wholly, taken in such water, as fresh-water fishes; although a resort to the salt water is necessary to the reinvigoration of their constitutions; and it is probable, to the excellence of their flesh, and the courage and boldness of their tempers.

To this class belong several of the finest and most important of all our fish, both as regards the table and the sport; for to this are directly referable the Salmon, that king of the piscine world, the Sea Trout, the Striped Bass, the Shad, and the Smelt; both of which, for reasons which I shall give when I am to treat of them under their own proper heads, I admit as Game Fishes.

Our fresh-water fishes, then, all belonging to the two classes above named, *Malacopterygii*, soft-finned, and *Acanthopterygii*, or spiny-finned, are divided into the following families:—

Of the first, Abdominal Malacopterygii, we have

I.—The family of Salmonidæ, of which the true sea Salmon is the type, and of which there are many varieties and sub-genera, both migratory and non-migratory; the principal are—

Genus Salmo.

The True Salmon (*Salmo Salar*).

The Greatest Lake Trout.—Mackinaw Salmon (*Salmo Amethystus*).

The Northern Lake Trout. — Siskawitz (*Salmo Siskawitz*).

The Lake Trout.—Salmon Trout (*Salmo Confinis*).

The Sebago Trout (*Salmo Sebago*).

The Arctic Charr (*Salmo Hoodii*).

The Sea Trout.—White Trout, or Silver Trout (*Salmo Trutta Marina*).

The Brook Trout (*Salmo Fontinalis*).

Genus Osmerus.

The Smelt (*Osmerus Viridescens*).

Genus Thymallus.

The Arctic Grayling (*Thymallus Signifer*).

Genus Coregonus.

The White Fish (*Coregonus Albus*).

The Otsego Bass,* misnomer (*Coregonus Otsego*).

II.—Family SILURIDÆ,

Containing many species, Cat-fish, Bull-heads, &c., unworthy of notice, except

Genus Silurus.

The Great Cat-fish.

III.—Family CYPRINIDÆ,

Containing many varieties. The Chub, Sucker, Shiner, Roach, Dace, Bream, &c., of no account except for bait, unless it be two imported species,

* This fish so closely resembles the White Fish (*Coregonus Albus*), as to be conceived by many persons to be merely a casual variety. This, however, does not appear to be in truth the case. It is greatly to be regretted, that true and distinctive names should not be attached to fishes which, having been absurdly misnamed by the ignorant early settlers, still go by those stupid misnomers—as in the present instance; where a fish having no possible analogy to a Bass, and, indeed, belonging to a different class of fish, "soft-finned," is termed Bass. The analogous fish in England are known as Gwyniad, Vendace, and Pollan. I would suggest "Otsego Lavaret" as a very suitable name for this *unnamed* species.

The Common Carp (*Cyprinus Carpio*).

The Golden Carp (*Cyprinus Auratus*).

IV.—Family Clupeidæ.

Genus Alosa.

The Shad* (*Alosa Præstabilis*).

Genus Clupea.

The Herring (*Clupea Harengas*).

V.—Family Esocidæ.

Genus Estor.

The Mascalonge (*Esox Estor*).

The Northern Pickerel (*Esox Lusioides*).

The Common Pickerel (*Esox Reticulatus*).

The Long Island Pickerel (*Esox Fasciatus*).

The Gar-pike (*Esox Osseus*).

Beside two or three other species, found in the Pennsylvanian and western waters.

This brings us to the end of our fresh-water, soft-finned fishes; or of such, at least, as are in anywise worthy to be accounted Game Fishes; and we come to the second division, *Acanthopterygii*, or spiny-finned fishes, which, though it is Baron Cuvier's first division, I have postponed to the *Malacopterygii*, or soft-finned fishes, on account of the greater estimation in which they are held, especially the noble Salmon, Pike and Shad families, by both epicure and sportsman.

Second, however, to these only are several of the families of

* I somewhat doubt this distinction. I have drawings, made from life, of two varieties of Shad taken in New York Bay, agreeing precisely with *Alosa Finta* and *Alosa Communis* of Yarrel—the Twaite and Allice Shad of England—to the latter of which I would refer this fish.

the second class, and scarcely inferior even to these is the splendid genus *Labrax*, unquestionably next to the Salmon, the most sporting fish in all respects in the world, and in his absence *facile princeps*.

Of the class ACANTHOPTERYGII, then, we have

The Family PERCIDÆ.

Genus Perca.

The Yellow Perch (*Perca Flavescens*).

Of this there are three or four very closely allied varieties.

The White Perch (*Perca Pallida*).

The Common Perch (*Perca Fluviatilis*). And others of less note, very closely allied, and perhaps casual varieties.

Genus Corvina.

The Malageshane (*Corvina Richardsoni*).

The Lake Sheep's-head (*Corvina Oscula*).

Genus Pomotis.

The Sun-fish (*Pomotis vulgaris*).

Genus Labrax.

The Striped Bass.—Rock Fish (*Labrax Lineatus*).

Genus Lucioperca.

American Sandre—Ohio Salmon, &c. (*Lucioperca Americana*).

The Canadian Sandre (*Lucioperca Canadensis*).

Genus Gristes.

The Black Bass.—Oswego Bass (*Grystes Nigricans*).

Genus Centrarchus.

The Rock Bass (*Centrarchus Æneas*).

Genus Otolithus.

The Weak Fish (*Otolithus Regalis*).

The Southern Trout (*Otolithus Carolinensis*).

And with these, unless the reader choose to add the Eel of the class Apodal Malacopterygii, family Anguillidæ, the list of the fresh-water Sporting Fishes of the United States and British Provinces may be said to close.

Of these fish, the True Salmon (*Salmo Salar*), the Sea Trout (*Salmo Trutta Marina*), the Brook Trout (*Salmo Fontinalis*), the Arctic Charr (*Salmo Hoodii*), and perhaps the Sebago Lake Trout, are migratory, as is also the Arctic Grayling (*Thymallus Signifer*); all the other Lake Trout, and such of the Brook Trout as are found in small streams above impracticable falls, or in spring ponds, or lakes without outlets, are stationary, or non-migratory; and the consequences of their habit may be very readily discovered in the inferiority of their flesh, both in colour and firmness of muscle, and in their comparatively lazy gait, and want of game qualities, vigour and endurance.

Of other soft-finned fishes, the Smelt (*Osmerus Viridescens*), the Shad (*Alosa Præstabilis*), and the Herring (*Clupea Harengas*), are migratory from salt to fresh water, and so, perhaps, is the Weak Fish, in the Southern waters, there misnamed Trout* (*Otolithus Carolinensis*).

* This fish I have never seen; but I greatly doubt that the fish called "Trout," in the South, is identical with the Northern Weak Fish. From Professor Agassiz, I understand it to be a peculiar variety of the Weak Fish (*Otolithus*), being spotted, rather than striped, and thus differing somewhat from it, and frequenting fresh streams, which the others do not.

The White Fish (*Coregonus Albus*) and the Otsego Bass (*Coregonus Otsego*) are partially migratory from the deeper waters of the lakes which they inhabit. All the *Siluridæ*, *Cyprinidæ*, and *Esocidæ* are stationary fish.

Three or four of the above species and varieties I have admitted with no small doubt, and first of these, in the family *Salmonidæ*, the Common Lake Trout* (*Salmo Confinis*), of Dekay; because I can see no sufficient cause for distinguishing this fish from the Greatest Lake Trout, or Mackinaw Salmon, with which it appears to me to be identical, except in size; whereas, size alone is a very insufficient cause of separation. Secondly, the Sebago Lake Trout, which is to be found, as a distinct variety, in no work on American Ichthyology; and yet I have thought it best to insert it on the authority of several distinguished sportsmen, who have had frequent opportunities of comparing it with the ordinary Lake Trout, and who pronounce it to be a new and nondescript fish, unless it be the true Salmon degenerated. This last hypothesis I am unwilling to listen to, as I disbelieve in the degeneration of animals, in peculiar localities, unless confined under unnatural circumstances, as a sea-running fish in fresh water, without means of egress. I understand that this Sebago Trout has access to the sea; there is no reason, therefore, why, if originally a true Salmon, it should have lost its true characteristics in waters having their exit through the Saco, more than in those which discharge viâ the Kennebec; or why it should continue to run up a small river, when it has

* With regard to the varieties of Lake Trout, of which there are certainly three entirely distinct, the *Amethystus*, the *Siskawitz*, and the *Confinis*, it is again much to be regretted that no distinguishing names have been given, all passing indiscriminately under the general term of Lake Trout.

deserted all the larger rivers westward of the Penobscot, with the exception of a very few which are, perhaps, still taken in the Androscoggin and the Kennebec, where, a few years ago, they absolutely swarmed.

With regard to this fish, however, I hope, before concluding this work, to receive more decided information from some of my obliging correspondents in that quarter; and perhaps even a specimen to compare with the other varieties of this genus.

Again, of the Sea Trout or White Trout, I have my doubts, whether it be not a Grilse, or Salmon of the third year. It is as yet, so far as I know, unfigured and undescribed; but my information concerning it from excellent fishermen on the waters where it abounds—the rivers mainly, which fall into the Bay of Gaspe and the Gulf of St. Lawrence—is so clear and strong, that I prefer noting it as a questionable variety, in the hopes of calling to it the attention of older naturalists than myself, and of those who have better opportunities of obtaining and examining specimens.

Lastly, the Red-bellied Trout (*Salmo Erythrogaster*), of Dr. Dekay, I decline to insert on his authority, being entirely unconvinced as to its being anything more than a mere accidental variety. The whole of that region of lakes and rivers, in the north-eastern angle of New York, in which this variety is said to exist, teems with accidental varieties of the Brook Trout, of almost every size, as well as shade and colour, both of flesh and external tints. The Trout of no two of these lakes or rivers are precisely identical. The same may be said of Brook Trout from various waters in Long Island. These differences, however, are not deemed sufficient (consisting, mainly, in variations of hue,

not of form, bony configuration, scales, or fins) whereon to found generic distinctions.

The same remarks apply to a small fish, which Dr. Dekay has described at length, and figured under a new name, as the Troutlet, in his Fauna of New York; and which is unquestionably nothing more than the young fry of the common Brook Trout, while it is so small as to retain the lateral transverse bars, or clouded bands, which have lately been discovered to belong to the fry of every known variety of the family of the Salmon, and which have caused all the confusion, and given rise to all the various theories, concerning the Parr of Great Britain.

Into all these points I shall enter more fully under their appropriate heads, when treating of the separate fish to which they relate.

The Smelt (*Osmerus Viridescens*), I have mentioned, though not properly a Game Fish—for it is probable that the statements of its being taken with the hook refer to the Athering or Sand Smelt—because there are some errors to be refuted, connected with him and the young of the true Salmon, which would not so easily be dealt with otherwise; and the Shad (*Alosa Præstabilis*) I have elevated to the rank of a Game Fish, not merely on account of the excellence of his flesh in a culinary point of view, but because I am well satisfied by indisputable proofs, that, although it is not usual to attempt the capture of this fish sportsmanlike, the fault rests not with the Shad, but with the angler.

He will not only take the fly, and on some occasions very freely, but runs strongly away with the line, and fights hard

before he is subdued. I regard him a very decided addition to the list of American Sporting Fishes.

The common Herring can be taken very readily in the same manner, and I have had very considerable amusement in killing them with a gaudy peacock-tail fly, in New York harbour, in the vicinity of Fort Diamond, at the Narrows.

With these exceptions, and the two varieties of White Fish, one of which is absurdly misnamed Otsego Bass, having about as much relation to a Bass as it has to a Flounder, all that I have named are admitted to be game by all fishermen; and these I have mentioned, because I have little or no doubt that they also, like their European congeners, the Gwyniad of Wales and the Pollan of Ireland, may be occasionally taken with the artificial fly.

All these fish are *Coregoni*, and are very nearly analogous to one another, forming a sort of intermediate link between the families of *Salmonidæ* and *Clupeidæ*, or Salmon and Shad, although they are included for many satisfactory reasons among the former—the common people in Great Britain calling them fresh-water Herring, while in the United States they not unfrequently pass by the name of Shad-salmon.

The flesh of all the varieties is delicate and highly flavoured. The desire of comparing these American *Coregoni* with the British varieties, and of bringing them somewhat more into general notice, has induced me to mention them, rather than their game nature.

I now proceed to the salt-water fishes, both those taken in deep, and those in shoal water, of the various families above named; and thereafter shall arrange them according to their haunts and habits.

Of those salt-water fish of the Atlantic coasts which afford the most real sport to the angler, and which are alone taken with the rod and reel, all the families belong to the class of the *Acanthopterygii*, or spiny-finned fishes, none of the soft-finned fishes of the abdominal division being taken in the shoal waters of the bays and estuaries; while the deep-sea fish are all of the *Sub-brachial Malacopterygii*, unless we may consider as such the Sea Bass and Porgee, which are, however, as often or oftener caught in shallow water.

Of salt-water fish, taken in shoal water, river mouths, and the like, *Acanthopterygii*, spiny-finned, we have the family

Percidæ, whereof the Perch is the type.

Genus Labrax.

The Striped Bass (*Labrax Lineatus*).

Mentioned above as a fresh-water fish, being frequently caught in rivers far above tide-water, as well as in the estuaries, and even in the surfs on the ocean borders.

Genus Centropristes.

The Sea Bass (*Centropristes Nigricans*).

Scienidæ.

Genus Leiostomus.

The Sea Chub.—Lafayette-fish (*Leiostomus Obliquus*).

Genus Otolithus.

The Weak Fish (*Otolithus Regalis*).

The Southern Trout (*Otolithus Carolinensis*).

Genus Umbrina.

The King Fish (*Umbrina Nebulosa*).

Genus Pogonias.

The Drum Fish (*Pogonias Chromis*).

Sparidæ.

Genus Sargus.

The Sheep's-head (*Sargus Ovis*).

Genus Pagrus.

The Porgee (*Pagrus Argyrops*).

Scombridæ.

Genus Temnodon.

The Blue Fish.—Skip-Jack (*Temnodon Saltator*).

Labridæ.

Genus Tautoga.

The Tautog.—Black Fish (*Tautoga Americana*).

These complete the list of those salt-water fish which are of any repute as affording sport to the angler in shoal water; they may all be taken with the rod and reel, in the bays, mouths of rivers, and shallow inlets along the greater portion of our coast, especially in the vicinity of reefs, the piles of old docks, or the hulls of sunken vessels, around which they are often found in so large shoals, and bite so freely and rapidly, as to afford a very high degree of amusement. Many persons are extremely fond of this kind of fishing, though it cannot sustain a moment's comparison with Trouting, much less Salmon fishing, or indeed with trolling or spinning for the Pike and the Black Bass.

Several of the above-mentioned fishes are of rare excellence; the Weak Fish and Blue Fish, when quite fresh out of the water, are not easily surpassed; but the King Fish and the

Sheep's-head, the latter a migratory fish, visiting us during the summer months only, are in far greater esteem, being regarded by epicures as inferior to none which are taken in our waters.

The most extraordinary day's sport I have seen recorded in this line fell to the lot of a gentleman of New York, well known as an enthusiastic amateur and a most skilful proficient in the gentle art, and was thus recorded at the time in the Commercial Advertiser of 1827. I note the circumstance, and quote the following lines from a very useful, unpretending, and not therefore less agreeable compendium, "The American Angler's Guide," published, I believe, by Mr. Brown, well known as the proprietor of the Angler's Depôt, where he keeps an excellent assortment of tackle of all kinds, in Fulton-street. I have often derived both information and entertainment from this good little manual, which is succinct and portable, and I strongly recommend it to my readers.

The feat to which I have alluded is thus recorded in its pages:—

"On Friday last, a gentleman of this city went out fishing from Rockaway into Jamaica Bay, with his son, a lad of twelve years of age. They commenced fishing at half-past seven in the morning, spent half an hour in dining at noon, and quit fishing at half-past one, having taken with their rods, in six hours, *four hundred and seventy-two* King Fish. Their guide was Joseph Bannister; none of these fish were taken by him, as he was diligently employed the whole time in preparing bait."

The writer adds that he admits this to have been "an extraordinary performance;" but he goes on to say "that he has

many times taken above one hundred in a tide, though of late years these fish have become scarce in those waters, it being supposed that their enemy, the Blue Fish, by preying on their young, have caused the scarcity."

It is scarcely necessary, I presume, to remark that no such feats are to be performed now-a-days; and he is a happy and an envied man, who succeeds at present in capturing a few brace of this delicious Game Fish.

I now come to the last section of my work, the deep-sea fishes, very few of which are worthy of remark in connection with the angler's sport, although they all are of superior excellence as dainties.

These are all soft-finned fishes, but they form a separate class of the *Malacopterygii*, owing to a peculiar arrangement of their fins, the bones supporting the ventrals being attached to the shoulders which support the pectorals, whence they have obtained the term sub-brachial.

To this class of sub-brachial *Malacopterygii* belong the two families of *Gadidæ* and *Pleuronectidæ*, Cod and Flat-fish, to one or other of which pertain all the species which are taken by the drop-line on our coast; a sport which is almost too dirty, as well as too laborious, to be in very truth a sport.

Of the family GADIDÆ, of which the Cod is the type, we have

The Common Cod (*Morrhua Vulgaris*).

The Haddock (*Morrhua Æglefinis*).

The Whiting (*Merlangus Americanus*).

And although there are several other species of more or less estimation for the table, as the Torsk or Tusk (*Brosmius Vulgaris*), the Hake (*Merlucius Vulgaris*), and some others, none but

these are such as to require enumeration in a work of this description.

Of the second family, PLEURONECTIDÆ, I shall think it enough to mention,

The Halibut (*Hippoglossus Vulgaris*), which is the largest species of this family, as well as the best that is taken in American waters; for the species of Turbot, *Rhombus*, which is found on the coasts of Massachusetts Bay, and that neighbourhood, is greatly inferior both in size and quality to the celebrated European fish of the same name.

The Flounder of New York (*Pleuronectes Dentatus*), which is also frequently taken, though more commonly by accident, while in pursuit of finer fish, than as the angler's prime object, is rather a delicate fish, and often bites freely.

With this brief enumeration of sea-fish I shall content myself, as the description and habits of others, though curious and full of interest to the ichthyologist and student of nature, belong rather to the department of science, than to the craft of the angler.

I may, however, mention, not as objects but accessories of the sport, the Atherine (*Atherina Menidia*), a variety of the fish known in England as the Sand Smelt, here commonly called the Spearling, or Sparling, and much used as a bait, for which its bright silvery colours particularly adapt it.

The British variety is frequently taken with the hook; and on the Southern coasts, where the true Smelt is unknown, it is commonly known and sold as that fish, to which it bears some degree of similarity in flavour, as well as in the cucumber smell common to both when freshly taken from the water.

I am not aware that the American fish is ever eaten, though it is very abundant on the coasts; in appearance, it so closely resembles the European species, that on a slight inspection it would be taken for it.

The Sand Launce (*Ammodytes Lanceu*), is also held in high estimation as a bait for sea and hand lines, owing to its silvery brightness. It is for the former of these little fish that the Blue Fish (*Temnodon Saltator*), and the Striped Bass (*Labrax Lineatus*), strike at the polished bone, pearl, or metal *squid*, as it is termed, of the fisherman, when it is made to play with a rotatory motion, glancing through the water, in the wake of a swift-sailing boat, or in the surf upon the outer beaches.

Having now accomplished the dry work of enumerating and classifying those of the fish of America, whether fresh or salt-water, which I consider worthy of the sportsman's notice, I shall proceed to describe them more or less briefly, according to the degree of interest attaching to their habits, migrations, growth, and breeding; and thereafter to the best and most improved mode of taking them; best, I mean, as regards art, piscatorial science, and sport, not looking to the mere amount of slaughter, but considering in this instance the *suaviter in modo*, long before the mere *fortiter in re*.

And here I will venture to request my reader, who may have proceeded thus far in this volume without finding very much to interest or enlighten him, not to lay by its pages in disgust; as this portion, necessarily partaking much of the character of a catalogue, can hardly be expected to be very amusing, while I think I can promise that he will find something to awaken his interest, whether he be a scientific naturalist or a mere sports-

man, before he has advanced many pages farther; inasmuch as, thanks especially to the assistance of my good friend Professor Agassiz, and other correspondents, I believe I shall have the pleasure of laying before him something that is not only new, but curious and highly interesting, concerning the growth, the breeding, and the varieties, several of them hitherto undescribed, of the family of Salmon (*Salmonidæ*) of North America, to the consideration of which I come without farther delay.

SALMONIDÆ, OR THE SALMON FAMILY.

It must not be supposed, although, for want of reflection on the subject, many persons probably may expect it, that the closest observer and most accurate discriminator of the facts on which the science of the naturalist is founded, can lay down the law with regard to the habits, the food, the haunts, the appetites, or even the distinct species, of that portion of the animal creation which dwell for the most part unseen in the bosom of the waters, with the same certainty as he can those of domestic animals, or even of birds and beasts, *feræ naturâ*.

Of the latter even, especially of wild birds, which emigrate from clime to clime with the change of seasons, there has been much difficulty in ascertaining the growth, the age, and the changes of plumage, from the immature to the adult animal, or from the winter to the summer dress—so much so, that out of individuals differing in age, sex, or season, of the same family, and belonging to a single species, in many instances two, three, or more distinct varieties have been created by naturalists.

Much has been effected, indeed, of late in these particulars, owing to the greater science and experience of modern natural-

ists,—who now prefer the investigation of facts to the building up of plausible theories,—to the greater diffusion of knowledge and love of scientific inquiry among the masses, and, in no slight degree, to the able and laborious system of experiments which have been set on foot and carried out by country gentlemen and sportsmen, to many of whom the world of letters is indebted for very interesting and remarkable discoveries.

It is but a few years, comparatively speaking, since that accurate observer and delightful writer, Gilbert White, of Selborne, the most charming rural naturalist whom England—perhaps the world—has produced, thought it not unworthy of his time or talents to enter into a long train of investigation and argument, in order to prove that the Swallow—as then appears to have been largely, if not generally, believed—did not pass the winter months in a torpid state, either in the hollows of decayed trees and caverns, or beneath the waters of stagnant pools and morasses.

In like manner Mr. Audubon has been peculiarly minute in describing the migrations of the Sora Rail, as witnessed by himself, for the purpose of counteracting the notion, which I myself still know to be prevalent among the vulgar and ignorant where these birds abound, that they burrow in the mud during the cold season, hybernating like the Marmot or the Bear.

If, then, errors so gross were commonly in vogue concerning animals, the greater portion of whose life is spent before our very eyes; which make their nests, rear their young, and come and go visibly, and in such manner that their presence and absence, nay, the periods of their departure and return, must

be observed even by the careless and inattentive looker-on; much more is it to be expected that the habits, nay, the sexes, ages, and distinct species of fish, which rarely present themselves to the eyes even of the most curious inquirers, which come and go unseen and unsuspected, whose mysteries of generation and reproduction are all performed in a medium the least penetrable to the eyes of science, whose changes of size and colour, from infancy to maturity, pass utterly beyond our ken, should have been misconceived, misinterpreted, and misdescribed.

Within the last few years more has been done to elucidate these mysteries, and to bring us to an accurate knowledge of this interesting portion of the animal creation, than in many previous centuries; and although much yet remains, infinitely more, doubtless, than has been done, still we have very recently attained much certain knowledge regarding several of the most interesting families; we have arrived at results which, by simple deduction, show us how we may hope to arrive at more, having now obtained data wherefrom to advance and discover the process by which to do so.

The means by which thus much has been accomplished, may be described briefly, as the taking nothing for granted, assuming nothing on hearsay beyond facts, and on investigating everything carefully and painfully, not following too readily preconceived opinions, nor being misled by mere external and superficial resemblances, but being guided by comparison and experiment, as founded in a great degree on anatomy and osteology.

In the examination and comparison of fishes, the clear

book will treat (with one exception, the Apodal *Malacopterygii*, one species of which will be slightly mentioned) possess the following:—

Two pectorals.	One caudal.
Two ventrals.	One dorsal.
One anal.	

No fish has more than two pectorals, or two ventrals; many have several anals, and several dorsals; none, unless deformed or monstrous, have more than one caudal.

The *Apodal Malacopterygii*, of which I have spoken, lack the ventrals entirely; wherefore their name *apodal*, footless; the ventral being assumed as performing the function of feet in the quadruped, although somewhat fancifully.

Now, on the *texture* of these fins is founded the distinction between the first two orders of fishes, as instituted by Baron Cuvier; the first order, *Acanthopterygii*, having the rays, by which the filamentous part of the fins is supported and extended, in part hard, spinous, and in some species, sharp and prickly; whence the designation—"*acanthos*," signifying a thorn; while the second order, *Malacopterygii*, have these rays invariably soft and flexible, as the term, derived from "*malacos*," soft, sufficiently indicates.

This distinction is so easily drawn, that when once mentioned it cannot be missed or overlooked by the most superficial observer; and as to one or other of these orders belongs every fish, without an exception, of which the sportsman takes cognisance—I do not of course include shell-fish—its importance is self-evident.

Of the spiny-finned fishes, though there are many families,

and many species of each family, there are no great subordinate divisions.

Of the flexible-finned fishes, on the contrary, there are three strongly-defined divisions, of which the largest is that containing

The *Abdominal Malacopterygii*; in all of which the two ventral fins, B B, are situate on the belly, attached to the walls of the stomach, and deriving no support from the bones of the shoulder. To this division belongs, among many others, the subject of the outline cut on page 37, the European Lake Trout; and, as a consequence, all the family of the *Salmonidæ*. The fishes of this division can be readily distinguished, on a mere external examination, by the fact that the ventral fins, B B, are situated much farther back than in those of the next division, occupying a position nearly longitudinally posterior to the pectorals, A A; while in those to which I next proceed, they are nearly vertically below them.

The second grand division of the flexible-finned fishes consists of the *Sub-brachial Malacopterygii*; in all of which the ventral fins, B B, are placed very near to the pectorals, A A, the bones supporting the former being attached to the bones of the shoulder which support the latter. The term sub-brachial briefly expresses this formation, signifying "having lower arms" —to which human limb the reference is pointed by the connection of the fin, in this division, to the shoulder.

The third division of the flexible-finned fishes, to which I allude rather to complete the subject, than that they fall regularly into the angler's way, consists of those designated by Baron Cuvier as the *Apodal Malacopterygii*; in all of which the

ventrals are entirely wanting. To this division belong the families of *Muræniidæ*, and *Anguillidæ*, Congers, Eels, and their congeners.

First then, having noted whether the fish we desire to know more minutely has hard or flexible fin-rays, and then, having ascertained by the position of his ventral fins, if soft-finned, to which division he belongs, by examining the number and position, as well as the texture, of the dorsal and anal fins, we shall speedily discover his family; or if we have no book at hand to which we can refer, we can easily so describe him by letter to some competent person, as will enable him readily to enlighten us on the subject.

To show the importance of possessing even the small degree of knowledge conveyed in these last few pages, I will merely observe that if the settlers of the shores of the Otsego had been even so far advanced in the science, they had not committed the blunder of misnaming the excellent fish of their waters, the Otsego *Bass;* when it is in truth one of the Salmon family—the former being a spiny, the latter a soft-finned family.

A few steps more would have prevented our Southern friends from the commission of the absurdity of designating a variety of Weak Fish as Trout—two fish which have not the most remote connection; and so on *ad infinitum*.

All the family of *Salmonidæ*, or Salmons, have *two* dorsal fins, as will be observed in the outline figure on page 37; the hinder one of which has no rays, but is merely a fleshy or fatty appendage. Had the Otsegoites known this simple fact, they would at once have perceived that their fish not only was not a Bass, but was a Salmon. And this same degree of attainment

would have prevented the application of the misnomer Trout to the Weak Fish. I have observed this very day, in the columns of a distinguished weekly journal, an offer on the part of a correspondent to describe the habits, &c., of the *Susquehana Salmon!* There being notoriously no Salmon in that or any Southern stream, although the Brook Trout abound in its upper waters, I venture at once to predict that this Salmon will turn out to be the fish described by Dekay as *Lucioperca Americana*, and variously called Ohio Salmon and Ohio Pickerel; being neither, but a species of the Perch family, with *one* spiny dorsal fin.

I hope these brief facts will induce sportsmen to give a little attention to this subject; and that they will not be alarmed by the harshness or apparent difficulty of a few foreign terms nor suffer themselves to be deterred by a mere show of trouble from acquiring, in a few minutes, that which will surely give them years of gratification.

More direct instruction in regard to the mode of observation, and the point to be observed, will be given under the head of each particular fish, in the body of the work; but I will here point out that it is very well to note down the number of rays severally contained in the pectoral, ventral, anal, caudal, and dorsal fins of any fish which is suspected of being an undescribed or distinct variety; as on this, as well as on the shape of these appendages, much depends in distinguishing individual species of the same family.

I will here, in corroboration of the last remark, state in two words, that, next to the arrangement of the gill-covers, of which more anon, the fact on which Yarrel relies most strongly for distinguishing the Bull Trout (*Salmo Eriox*) from the true

Salmon (*Salmo Salar*) is this, that the caudal fin of the former is convex, while that of the latter is more or less concave, or forked, in proportion to the age of the individual fish.

I shall now pass to the consideration of the gill-covers, the apparatus by means of which the fish breathes; in other words, by which the oxygen is separated from the water, in which the animal exists, as it enters by the mouth and passes out at the aperture of the gills, conveying its influence to the blood in its passage.

This apparatus being of course of the highest degree of importance to the animal, varies in form and structure according to the various exigencies of the different species to which it is attached; and it is therefore of great value to the observer in distinguishing one family, and even one species of the same family, from another.

With regard to the family of which we are now treating (the *Salmonidæ*), beyond all question the most important and most interesting to the sportsman, as being the gamest, boldest, and strongest of all the fish with which he has to do, and to the epicure likewise, as affording the greatest varieties of the most delicious food, the remarks I am about to make have especial application.

Of no other family known to the sportsman, are the species so numerous and so difficult of definition; and not only the truly distinct species, but the subordinate varieties, produced in the same species by difference of food, of water, of bottom-ground in the lakes or rivers haunted by each, and even by the degrees of light or shadow which affects the localities which they haunt. These varieties, often differing by many pounds'

weight, colours in the broadest sense of the word, not tints or shades of hue, quality of flesh, and shape, are by no means to be set down as distinct and permanent species; for it will be found that a transposition of these from one place to another, and even the regular course of reproduction, will bring them back to the original or normal type.

What strikes us, moreover, at first sight, as in no small degree singular, is the fact, that different varieties of one species will very frequently differ more widely from one another, and from the original type, so far as those externals which strike the mere superficial observer, than entirely distinct and immutable species.

This it is which so often leads common and vulgar-minded persons, who are in the habit of boasting that they believe their own eyes only, and resorting to other absurdities of that kind, and who will not take the trouble of connecting causes and effects, or considering logical consequences, to disregard, and even to hold in contempt, the teachings of scientific men as mere theoretical dreamers, useless coiners of hard terms, and founders of distinctions, founded upon no difference.

Such, I am sorry to say, is too often the habit of sportsmen; who will frequently give ear to the superstitious and absurd garrulity of some rustic ignoramus, who pronounces his absolute yea or nay upon some fact about which he is utterly ignorant, and who has no earthly qualification for judging on the qualities of the bird, beast, or fish in question, than that of having seen it so often that he ought to know something about it, which he does not; while they turn away contemptuously, or listen coldly to the teachings of the man, whose arguments are

founded upon facts that cannot err, upon deductions drawn from differences of anatomical structure, permanent from generation to generation, and liable to no modification by the change of external circumstances.

This it is which renders the structure of the fins, the shape of the gills, the system of the teeth, and other matters of the same kind, which pass wholly unnoticed by the clod-hopping hunter, of all importance in distinguishing one species from another; while the size, the weight, the colour and number of the spots, things to which he will point as decisive with all the pig-headed presumption of self-conceited ignorance, are of little, if any weight, as varying in individuals, and not transmitted, like to like, through generations.

Almost all the really distinct species of the *Salmonidæ* are distinguished principally one from another by the form of the head and the structure of the gills in the first degree, and by the dental system in the second. Any permanent and unvarying difference in these, coupled to other variations of colour, form, habit, or the like, which might otherwise be deemed casual, being held sufficient to constitute a distinct species.

Many discoveries have been made through these means of late years; many varieties, which were formerly supposed to be truly distinct, having been proved to be identical; and many new species discovered—the tendency of the whole having been to simplify and to diminish the number of species, in the upshot, and thereby to decrease the labours of the student, and to facilitate the acquisitions of science.

Much, however, yet remains to be done, as will be rendered evident by the consideration that, even in so circumscribed a

territory as Great Britain, every water of which has been explored, and, it may be presumed, almost every fish submitted to the examination of scientific men, great doubts yet exist concerning many forms, especially of this family of *Salmonidæ*, whether they are absolutely distinct, or merely casual varieties, incapable of reproduction.

In this country, with its boundless lakes and gigantic rivers —all those to the northward and eastward, and all those feeding the tributaries, or lying in the vast basin, of the St. Lawrence, as well as all those on the western or Pacific coast, flowing down through the Sacramento and Columbia, or wasting in the arid sands or wet morasses of the Great Central Basin, all teeming with varieties, perhaps distinct species of the Salmon—what a vast, what an unexplored field for the sportsman, the naturalist; and how doubly charming for him who unites in one individual both capacities! But two distinct varieties of the American Lake Trout, or at the most three, are as yet made out—for I think it doubtful whether there be any positive grounds on which to establish a distinction between the *Salmo Confinis* of Dekay, known in the Eastern States and New York as the common Lake Trout, and the *Salmo Amethystus* of Mitchil, known as the Mackinaw Salmon. The *Salmo Siskawitz* of Agassiz, discovered in the course of the past summer in Lakes Superior and Huron, is clearly a marked and permanent species. That there is yet one other distinct species, the Sebago Lake Trout, I fully believe, but only having heard of it by oral description, I dare not take upon myself, without examination and comparison, to decide the question.

Again; another huge fish is constantly mentioned as taken at

times in the lakes of Hamilton County, in New York, which, if it be not, as I believe it is, a gigantic casual variety of the common Brook Trout (*Salmo Fontinalis*), is certainly a distinct fish.

A slight examination of the gills, teeth, and fins, will at once settle this point.

Of the Common Trout, but one species is as yet firmly ascertained, unless the Red-bellied Trout (*Salmo Erythrogaster*), of Dekay, prove to be a distinct form; which I, for one, do not at all believe. The Troutlet of that author is merely the young of the Common Trout.

Whether there exists a Salmon Trout or Silver Trout (*Salmo Trutta Marina*) at all in American waters, apart from the Salmon Peel, Grilse, and Common Trout, having access to salt water, likewise remains to be proved, by the aid of those easy methods of examination, the use of which I so earnestly desire to impress upon my friends and fellow-sportsmen, not merely as an aid to science, but as an immense addition to their own individual gratification, when in pursuit of their finny prey by the wild margin of some far woodland lake, or on the rocky borders of some lone torrent of the wilderness.

That many new species, entirely unsuspected and undescribed, still remain to be found and recorded in our waters, I hold to be undoubted; when they will be discovered, or by whom, is another question; for I regret to say it, as yet the spirit of science, and the desire to facilitate and assist the inquiries of the man of letters, has scarcely penetrated the breast of the American sportsman; and while, in England and on the European continent, many the most distinguished correspondents

of the literary and scientific institutions of those lands are sportsmen, who have contributed most highly to the advancement of knowledge by their investigations, experiments, and contributions, we can, on this side, alas! point to but two or three of the sporting fraternity who have cared to record themselves as anything more than killers of animals; of the habits, characteristics, and even names of which they are but too often grossly ignorant.

A few there are, it is true, who aspire to higher things, and who are actuated by something more than the mere love of killing, the mere ambition of boasting of bag; and among these (may their numbers increase daily!) it will not, I hope, be deemed impertinent to specify the author of "The Birds of Long Island," who, from a sportsman of no secondary skill or energy, has successfully aspired to the honours of a naturalist; and has most deservedly acquired, as such, no small degree of celebrity and favour.

From this short excursion, into which I have been naturally led in the course of my subject, I return to the description of the gill-covers of fish, and thereafter to the dental system, the method of comparing which I shall lay down briefly for the use of the learner, and then proceed at once to the history of Sporting Fishes.

The subject, which I now present, is the head of the Silver Trout of Europe (*Salmo Lacustris*), a species found in the large lakes of that continent. The figure is copied, by permission, from Professor Agassiz' great work on the "Fresh-water Fishes of Central Europe."

The gill-covers of all the fishes of the three first divisions,

with which alone we have to do, consist of four principal parts, and their use is to close the aperture behind the gills, which in all these three divisions is so formed, and so freely or loosely

suspended, that the water bathes in its passage every part of their surface.

These parts are, the *pre-operculum*, or fore-gill-cover, No. 1; the *operculum*, or gill-cover proper, No. 2; the *sub-operculum*, or under-gill-cover, No. 3; and the *inter-operculum*, or intermediate gill-cover, No. 4. The *branchiostegous* rays, as they are termed, are indicated by No. 5; and the fixed plates, forming the posterior immoveable margin of the gill-covers, by No. 6. No. 7 indicates the pectoral fin.

How widely these parts differ in form, in different species of the Salmon tribe, will become at once apparent by a comparison between the gill-covers in the figure above, and those of the true Salmon (*Salmo Salar*), and the Bull Trout (*Salmo Eriox*), Nos. 2 and 3, in the following cut, which, with these, presents a view of the interior of the mouth and the dental system of the Common Trout (*Salmo Fario*), of Great Britain.

In figure 2 of this cut, representing the gill-cover of the true Salmon, it will strike any casual observer that the hinder

margin of the whole covering forms nearly a semicircle, while that of No. 3, the Bull Trout, approaches more nearly to a rectangular figure. In the former, the *pre-operculum*, the fore-gill-cover, A, differs from the same part, similarly marked, in No. 3, it being more rectilinear; while the *operculum*, the gill-cover proper, B, of the former slopes hindward and backward; the same portion, B, in No. 3, cutting in a horizontal line upon the joints of the *sub-operculum* and *inter-operculum*.

And in all respects both differ entirely from the arrangement of the same parts in the head of the Silver Trout, exhibited in the cut last preceding, page 48.

The most striking consequence of these differences is, that a straight line, drawn backward from the front teeth of the upper jaw, the mouth being closed, to the longest posterior projection of the gill-cover, will, in the three fish, run at a totally different angle to the horizontal line of the body; and will occupy an entirely different situation in respect to the eye; such a line in the head of the Salmon (*Salmo Salar*), and in the Silver Trout (*Salmo Lacustris*), passing close below the

orbit of the eye; while in that of the Bull Trout (*Salmo Eriox*), it will run obliquely very far below it.

This distinction is very easy of observation, and is extremely important in the definition of species; as indeed is everything connected with the form and peculiarities of the head, not forgetting its relative proportion to the entire length of the body.

Of no less value is the arrangement of the teeth in the different classes, families, and species of fish; there being, on this point, infinitely greater variety than can be imagined by persons who have given their attention only to the structure of quadrupeds.

"The teeth," says Mr. Yarrel, in the introduction of his fine work on British Fishes—from which I have taken the liberty of borrowing the last cut, descriptive of the gill-covers and dental system of the Salmon, Bull Trout, and Common Trout—"of fishes are so constant, as well as permanent in their characters, as to be worthy of particular attention. In the opinion of the best ichthyologists, they are second only to the fins, which in their number, situation, size and form, are admitted to be of first-rate importance.

"Some fishes have teeth attached to all the bones that assist in forming the cavity of the mouth and pharynx, to the intermaxillary, the maxillary, and palatine bones, the vomer, the tongue, the branchial arches supporting the gills, and the pharyngeal bones. Sometimes the teeth are uniform in shape on the various bones, at others differing. One or more of these bones are sometimes without teeth of any sort; and there are fishes that have no teeth whatever on any of

them. The teeth are named according to the bones upon which they are placed; and are referred to, as maxillary, intermaxillary, palatine, vomerine, &c.—depending upon their position."

A reference to page 49 will show the situation of the teeth in the Trout, with five rows on the upper surface of the mouth, and four rows below; the particular bones upon which these rows are placed, are also referred to.

Mr. Yarrel then proceeds to descant, somewhat too largely for extraction in a work of this description, on the form, position, and uses of the various teeth in different families of fishes; but the gist of his remarks I prefer combining under the heads of the various fishes to which they belong; and I shall only add here, that in some species the teeth are arranged as in the *Salmonidæ*, in duplicate or triplicate rows of single teeth; in others in dense patches, occupying sometimes the greater part of the palate, set like the bristles on a shoe-brush, as the *Esocidæ* or Pike family; and again in others, as the species *Labrax*, of the family *Percidæ*, to which belongs our own noble Striped Bass, they cover the whole tongue, besides being thickly set on the palate.

The position and shape of these teeth indicate as clearly the habits, mode of feeding, and the food, of the various families to which they belong, as do the teeth of the carnivorous, ruminating, or gnawing quadrupeds inform the naturalist whether the creature, of which the jaw-bone only lies before him, fed on animal substances, on grass, on grain, or on the bark and hard-shelled nuts of trees; or as the beaks and bills of birds tell the experienced looker-on whether the

owner was a bird of prey, an insect-eating warbler, or a grain-cracker.

The distinction, therefore, which is founded upon the difference of the teeth in different fishes is by no means fanciful, or resorted to merely to enable naturalists to display their ingenuity in making definitions, and multiplying species, as many people stolidly imagine; but is real and permanent, as representing the great subdivisions of the dwellers of the waters, as those which feed on living, those which feed on dead animals of their own species, as insect-eaters, or masticators of hard shell-fish, and so forth, unto the end. Differences, which even the most bigoted enemy of scientific distinctions must admit to be as real, and true in nature, as those between the tiger and the wolf, the ox that chews his cud, and the horse which fattens at the manger.

I have known a sage coroner in England, who was wont to indulge in sapient ridicule of the learned professions, and to sneer at anatomical and physiological distinctions, who gravely sat in inquest over some exhumed bones, and solemnly recorded a verdict of wilful murder against some person or persons unknown; the skeleton, when examined, turning out to be that of a defunct cow.

Such instances are becoming, I am happy to say, rare, as regards men in general, and those sciences which regard the human race and domestic animals. Why it should not be so with the sportsman, I know not; but too true it is, that most of that fraternity obstinately adhere to ancient error, even when it is clearly pointed out; and attempt to ridicule the man of letters as a mere theorist, and unpractical, for attempt-

ing to correct them in their blunders of nomenclature, whereby they confuse all the tribes of the earth, the air, and the water, and all the things that have life, whether animal or vegetable, therein.

Little are they aware how fantastic are the tricks which they play, "like angry apes before high heaven," in the eyes of all those, whether naturalists or sportsmen, who do not confound conceit with knowledge, or wit with impertinent vulgarity.

I shall now proceed to a few observations with regard to the figure No. 1, in the last wood-cut, on page 49, which represents the interior of the mouth, opened to the utmost, of the Common Trout of Great Britain and the European continent (*Salmo Fario*); which is selected by Mr. Yarrel as "showing"—to borrow his own words—"the most complete series of teeth among the *Salmonidæ*; and the value of the arrangement, as instruments for seizure and prehension, arising from the interposition of the different rows, the four lines of teeth on the lower surface alternating, when the mouth is closed, with the five rows on the upper surface, those on the vomer shutting in between the two rows on the tongue," &c.

In this cut, letter A represents the situation of the row of teeth that is fixed on the central bone of the roof of the mouth, called the vomer, from some fancied resemblance to the share of a plough, for which the word used is the Latin term; B B, refer to the teeth on the right and left palatine bones; C, to the row of hooked teeth on each side of the tongue; D D, to the row of teeth outside the palatine bones, on the upper jaw, which are those of the superior maxillary bones;

and E E, to the outside row on the maxillary bones of the lower jaw.

Now it will readily be understood what is the importance of examining carefully this system of teeth, in the different varieties of the Salmon family, whether called Salmon, Salmon Trout, Lake Trout, Brook Trout, or any other local name whatsoever; when it is stated that the distinct species are very strongly and permanently indicated by the number of teeth found in each upon the vomer, or central bone of the roof of the mouth.

In the true Salmon, the teeth on the vomer very rarely exceed two; and sometimes there is but one.

In the Bull Trout, the teeth are longer and stronger than those of the true Salmon; but, like that fish, he has but two, or at most three teeth on the vomer; he is distinguished, according to the authorities, by the different formation of his gill-covers, and the convex form of his caudal fin, whence he is said to be termed the Round-tail in the River Annan, in Scotland. This fish is unknown in America, and is merely mentioned for the sake of example and illustration.

In the Salmon Trout of Great Britain (*Salmo Trutta*, Lin.), a migratory fish, growing to a very large size, the teeth extend nearly the whole length of the vomer, thereby establishing a distinction between this and the two aforenamed species.

Of the Common Trout, we have already seen the dental arrangement in the two distinct varieties of Lake Trout, recognised by authorities in Great Britain, which are non-migratory, and analogous to our Lake Trout.

In the Great Grey Trout or Loch Awe Trout (*Salmo Ferox*),

which is common to most of the large Scottish and Irish inland waters, and which is pronounced by Mr. Agassiz to be distinct from any of the continental Lake Trout—these teeth extend along the whole length of the vomer.

And in the Lochleven Trout (*Salmo Levenensis* sive *Cæcifer*, Walker and Palmer), if it be a distinct species from the Common Trout (*Salmo Fario*), as appears to be conceded—although I must say I doubt it, as I do the Gillaroo, which, however, is more doubtful—there are thirteen teeth on the vomer, extending through its whole length.

It would be well, indeed, if American anglers would take a little pains about the examination of these points, and would note them down in their tablets—in which, doubtless, they insert the weight of their captives—together with the relative proportion of the length of the head to that of the entire body; the form of the gill-covers; and relative position of the eye to a line drawn from the front teeth to the lower posterior angle of the *operculum* or *sub-operculum*, as it may be; the number of rays in each of the several fins; and especially the form of the caudal fin-tail—whether forked, concave, square, or convex.

A very few memoranda on such points as these, accurately recorded, and assisted, where practicable, by the roughest sketch, would be of greater utility to the cause of science, than can be readily imagined; and we should undoubtedly soon arrive at facts of great importance, and perhaps discover some new and interesting species of this most interesting family.

At all events, we should not be tantalised by information so vague and indefinite as that conveyed in a note to the Appendix,

contributed by the members of the Pisceo Club to Dr. Bethune, for the beautiful and valuable edition of Walton's Angler, recently given to the American world—with notes on American fishing, the only fault of which is their brevity—by that accomplished fisherman and erudite scholar, who takes no shame to be held a follower of the gentle art, and to possess the finest piscatorial library owned in the United States, whether by private individual or collective body.

"In June of this year," says the note to which I have reference, "the president of this club killed a *red-fleshed* Lake Trout of 24 lbs. weight!" And no more!

Information of the same kind has been given to me by Mr. C. Webber, the author of some pleasant letters on Hamilton County Fishing, published during the past year in the columns of the New York Courier and Inquirer; but, unfortunately, none of the fortunate takers have noted any points relative to this fish, on which any deliberate opinion can be formed.

The flesh of the ordinary Lake Trouts of America (*Confinis, Amethystus,* and *Siskawitz*) are all pale, dingy, yellowish buff, tasteless, coarse, muddy, and flaccid.

It seems to be admitted that the red-fleshed Lake Trout is of more brilliant external colouring than the common variety.

This is the fish of which I have spoken as being unquestionably a distinct species, if not an overgrown and gigantic variety of the Brook Trout (*Salmo Fontinalis*). This latter, I believe to be the case; though it is impossible to pronounce positively, without seeing the fish, and instituting careful comparison.

The fishermen of that district, on the lake, assert, I understand, positively that this is not the case; but of course their opinion is utterly valueless, being founded on some such admirable reason as that the Brook Trout never grows to be above five or six pounds; meaning only that they have never seen what they take to be one over that average. Just in the same manner, a person used to take a fish only in the small mountain brooks of Maine, New Hampshire, or Vermont, might tell you quite as plausibly, quite as positively, and quite as truthfully—so far as his miserable experience of truth goes—that the Brook Trout never grows to be above half a pound—nor does it in his waters.

The Common Trout of England (*Salmo Fario*), which is so closely connected with our Brook Trout (*Salmo Fontinalis*), as to be constantly mistaken for it by casual observers, is continually taken in the larger rivers, especially the Thames, and in some of the Irish waters, from ten to fifteen pounds in weight. Mr. Yarrel, when preparing his "British Fishes," had a minute before him of six Trout taken in the Thames, above Oxford, by minnow-spinning, which weighed together fifty-four pounds, the largest weighing thirteen pounds; and one is recorded in the Transactions of the Linnæan Society as having been taken on the 1st of January, 1822, in a little stream ten feet wide, branching from the Avon at the back of Castle-street, Salisbury, which on being taken out of the water was found to weigh twenty-five pounds.

These instances, which are beyond dispute, in relation to a species so closely related to our fish as the *Salmo Fario*, render

it anything but improbable that it too, in favourable situations, should grow to an equal size; nor is there any reason for doubting it, since it is known to grow to the weight of five or six pounds, within a few ounces of which latter weight I have myself seen it; and there is no natural or physical analogy by which we should set that weight as the limit to its increase.

Should these remarks call the attention of sportsmen to a matter of deep interest, and elicit from them occasional records of examinations, which none can institute so well as they, their end will be fully answered, and these pages will not have been thrown away.

We now come at once to the history of this family, and first, as best, to that of the true Salmon.

This, being the noblest and most game in its character of all fishes, as I have observed before, once abounding in all waters eastward of the Hudson, and though it has now ceased to exist in numbers west of the Penobscot, and even there can be rarely taken with the fly, is still the choicest pursuit of the American angler, although he may be now compelled to seek it in the difficult and uncleared basins of the Nova Scotian rivers; in the northern tributaries of the huge St. Lawrence; or yet farther to the westward, in the streams of the Columbia and the cold torrents of Oregon, all of which contain the true Salmon, with many other noble and distinct varieties, in unequalled numbers.

Of this glorious fish, of its generation, migrations, growth, and habits, so much has been discovered within, comparatively

speaking, a few years, that I am enabled to present a considerable number of facts, which will be doubtless new to many of my readers, and which may be received as ascertained and authenticated beyond the possibility of doubt.

and record such facts as daily occur under their eyes, renders it very difficult to obtain such information as might assist one in coming to any conclusion.

So far as I can judge, however, this difference does not occur on this part of the continent at least; nor do I believe that the Salmon are earlier in their appearance in the St. Lawrence, which flows through the largest chain of fresh-water lakes in the world, than the St. John's, or the Penobscot, which lie farther to the south, and have no lakes of any magnitude on their waters. It must be mentioned, however, here, that all these rivers are equally swollen by melting snows; and that, being frozen solidly till late in the spring, the period of their opening naturally connects itself with the appearance of the fish.

The Connecticut River, which has no large lake on its course, and is the southernmost of all the rivers which have furnished Salmon for many years past, has ceased to be a Salmon river; or some facts might have been ascertained through observation of its waters. The Kennebec also, though formerly an unrivalled Salmon river, is becoming yearly less productive of this fine fish. I am inclined to think, however, that it is the earliest Salmon river on this side of the American continent; with the Arctic rivers I have of course nothing to do; and of the rivers or natural productions of California, Oregon, and the Pacific coast, we shall know nothing on which reliance can be placed, until the gold-hunting hordes are replaced by a stationary and organised population.

The mouth of the Kennebec is about one degree to the southward and westward of the Penobscot, and flows out of a large

sheet of water, Moosehead Lake, which abounds in the common Lake Trout, growing to a very large size, the *Salmo Confinis* of Dekay. I presume that the true Salmon no longer has the power of making his way up to the head-waters of this beautiful and limpid stream, in consequence of the numerous and lofty dams which bar its course; but of this I am not certain.

The Salmon enters our rivers, then, rarely before the middle of May, and is taken in the estuaries so late as the end of July; and during the early part of the season, nearly, indeed, until the latter date, does not ascend far above tide-water, generally going up with the flood, and returning with the ebb. At this time they are taken by thousands in stake-nets, on the Penobscot and other eastern rivers, and sent thence, packed in ice, to the markets of all the larger cities of the United States.

At the time of their first entering the fresh water, when they are in the highest possible condition, in the greatest perfection of flesh and flavour, and at the height of external beauty, they are of a rich transparent bluish-black, varied with greenish reflections along the back, these colours gradually dying away as they approach and pass the lateral line, below which the belly is of the most beautiful glistening silvery whiteness. The dorsal, caudal, and pectoral fins are dusky black, the small fatty second dorsal fin bluish-black, the ventral fins white on the outer side, but somewhat darker within, and the anal fin silvery white, like the belly.

There are generally a few dark spots dispersed along the body about the lateral line; and in the female fish these are more numerous and conspicuous than in the males.

The accompanying cut is of a female, fresh run from the sea, and is copied, by permission, from the figure by Sonrel, in Mr. Agassiz's great work alluded to above. The individual from which the figure is taken was caught in the neighbourhood of Havre-de-Grace, in France; but the Salmon of the two continents are identical.

I will here observe, *en passant*, that whenever it has been in my power to obtain specimens, either living or in spirits, I have myself drawn the figures from nature on the wood; but where, from the season of the year, or other causes, I have been unable to obtain that advantage, I have copied my illustrations from the best authorities, where I could find plates or drawings which I deemed satisfactory. In the absence of either, I have left the fish unrepresented, in preference to giving incorrect caricatures of the animal—such as disgrace too many works of natural history, and, I am sorry to say, among

others, the great natural history lately published by the State of New York, the illustrations of which are below contempt as works of art, and, in a scientific view, utterly useless and uncharacteristic.

After they have gained the upper and shallow parts of the rivers, preparatory to the deposition of their spawn, the colours of the Salmon are materially altered; the male becomes marked on the cheek with orange-coloured stripes, the lower jaw acquires a peculiar projection and turns upward at the point in a hard, hooked, cartilaginous excrescence, which, when the mouth is closed, occupies a hollow between the intermaxillary bones.

The body of the fish becomes greenish above, with the sides of an orange hue, fading into yellowish green on the belly, and the spots assume a sanguine hue, the dorsal and caudal fins being more or less spotted. The females at this season are even darker than on their arrival in fresh water.

The males are at this period termed Red-fish in Great Britain, and the females Black-fish; and they are so designated in the very salutary enactments which, in that country, by protecting the fish during their season of breeding, have preserved them from extirpation; enactments which, as cannot be too much regretted or too strongly reprobated, the recalcitrative and over-independent spirit of our people will not tolerate, much less obey.

The time will come, when the population at large will deplore this foolish and discreditable spirit; when, like him who slew the goose which laid the golden eggs, they find that by their own ultra-democratic spirit, they are deprived entirely and

for ever of a great source of national pleasure, as well as national profit and wealth—for such are the fisheries of a country.

During the winter the fish go through the process of spawning, which is thus described by Mr. Ellis, in his "Natural History of the Salmon," as quoted by Yarrel in his "British Fishes:"

"A pair of fish are seen to make a furrow, by working up the gravel with their noses, rather against the stream, as a Salmon cannot work with his head down stream, for the water then going into his gills the wrong way, drowns him. When the furrow is made, the male and female retire to a little distance, one to the one side, and the other to the other side of the furrow; they then throw themselves on their sides, again come together, and rubbing against each other, both shed their spawn into the furrow at the same time. This process is not completed at once; it requires from eight to twelve days for them to lay all their spawn, and when they have done they betake them to the pools, and descend to the sea, to refresh themselves."

At this time they are lean, out of condition, and unfit for food. Meanwhile, the female has acquired a greyish colour on the back, with bright yellow sides. She is covered above the lateral line, including the dorsal and caudal fins, with alternate dusky and ruddy spots. Her pectoral, ventral, and anal fins, are of a bluish-grey colour. She is now a long, lank, big-headed, flat-sided fish, as unlike as possible to the beautifully-formed glistening creature which ran up the stream in the preceding autumn.

She is now termed properly a Baggit, and the male a Kipper; and the two, generally, Kelts.

Before entering the salt water, they linger awhile in the brackish water of the tide-ways, as they did on ascending the rivers, obtaining, it is said, thereby a release from certain parasitical animals, generated, these by the fresh, these by the salt water, at each change of waters.

In Great Britain, the period of the Salmon's spawning varies from November to the end of January. They have been carefully watched during the whole process, as have the eggs after their deposition, so that the length of time which it takes them to attain to maturity is accurately known. This time has been ascertained by Mr. Shaw, in a series of experiments, of which I shall have occasion to speak more fully hereafter, to be about

114 days, when the temperature of the water is . 36°
101 days, ... 43°
90 days, ... 45°

These experiments were performed in the open air, and in natural streams, liable to the ordinary influences of the atmosphere and weather.

Dr. Knox, however, as is recorded in the Transactions of the Royal Society of Edinburgh, observed a pair of Salmon which completed their spawning, and covered up their ova with gravel, in the usual way, on the 2nd of November. This was in one of the northern tributaries of the Tweed.

On the 25th of February, or at the end of one hundred and sixteen days, the ova were dug up, and found unchanged. On being removed, however, at this stage, and placed in bottles of

water in warm rooms, the eggs were matured almost immediately, and the young fry hatched. In this state they can be preserved in the bottles, with the water unchanged, for about ten days, as during that time they are supported on the yolk of the egg which adheres to the under part of their bodies, as exhibited in figure 1 on the cut at the head of this article.

On the 23rd of March, according to Dr. Knox, the ova began to change, and it was not until the 1st of April that the fry were found to have quitted the beds.

Mr. Shaw's experiments were, however, so conducted as to furnish data on which more reliance may be placed; and as these are of the greatest interest, and as from experiments similarly conducted, farther results of a different kind might be attained, of surpassing importance, I shall state them somewhat at length.

A full account will be found, by those who desire to investigate the subject more thoroughly, in the Edinburgh New Philosophical Journal for July, 1836, and January, 1838.

Mr. Shaw, it seems, caused three ponds to be made, of different size, at about fifty yards distance from a Salmon river, the Erith, the ponds being supplied by a stream of spring-water, well furnished with the larvæ of insects. The average temperature of the water in the rivulet was rather higher and less variable than of that in the river; otherwise the circumstances of the ova contained in the ponds, and of the young fry produced therefrom, were precisely similar to those of the spawn and fry in the river.

These ponds were all two feet deep, with well-gravelled

bottoms; the highest pond eighteen feet by twenty-two, the second eighteen by twenty-five, the third thirty by fifty.

Observing two Salmon, male and female, in the river preparing to deposit their spawn, Mr. Shaw prepared in the shingle, by the stream's edge, a small trench, through which he directed a stream of water from the river, and at the lower extremity of the trench, placed a large earthenware basin to receive the ova. This done, by means of a hoop-net he secured the two fish which he had observed; and placing the female, while alive, in the trench, forced her, by gentle pressure of her body, to deposit her ova in the trench. The male fish was then placed in the same position, and a quantity of the milt being pressed from his body, passed down the stream, and thoroughly impregnated the ova, which were then transferred to the basin, and thence to the small stream which fed the upper pond, where they were covered up in the gravel as usual. The temperature of the stream was 40°, that of the river 36°. The skins of the Salmon were preserved, in order to prevent the possibility of doubt or cavilling concerning the species. The male fish, when taken, weighed sixteen, the female eight pounds.

The result was, that the young fish were hatched, as I have stated in the scale above given. When first emerging from the membrane in which it had been enclosed, with the yolk adhering to the abdomen, the young fry is as it is shown in No. 1 of the cut referred to above. The yolk is absorbed in twenty-seven days, after which the young fish requires nourishment. At the end of two months, the young fish has attained the length of an inch and a quarter, as represented at No. 2; and at the age of six months, he has grown to the size of three inches

and a quarter, and, except in dimensions, is exactly rendered in No. 3.

From these facts we arrive at two consequences. First, that the growth of the young Salmon has been greatly overrated; and, secondly, that at a certain period of its life the Salmon *is* a Parr. The extent to which the growth of the Salmon has been overrated will be perceived at once, when it is known that Dr. Knox, in the paper from which I have already quoted, states that the fry which emerged from their capsules on the 1st of April were taken, on the 22nd of the same month in the same year, as Smalts, with the fly, of the size of the little finger.

It was also generally believed that the fry of the year descended to the sea that very spring, and returned in the autumn, Grilse, varying from two to seven pounds' weight.

It is distinctly shown, however, by Mr. Shaw, that the young Salmon, which is called a Pink while in the state represented above, having perpendicular lateral bars or markings of a dusky grey colour, which were once supposed to be peculiar to the Parr, does not become a Smalt, or go down to the sea until the second spring, tarrying a whole year in the fresh water.

Salmon Smalt one year old.

The fish here represented measured seven inches and a half in length, and three inches and one-eighth in circumference.

Its gill-covers were silvery, marked with a dark spot; belly and sides, up to the lateral line of the same, silvery colour; back and sides, down to the lateral line, dusky, inclining to green; sides above the lateral line marked with dusky spots; along the lateral line, and both a little above and a little below it, several dull obscure red spots. The dorsal fin has twelve rays, marked with several dusky spots; the pectoral fin has twelve rays of a dusky olive colour; the ventral fin eight rays of a silvery white; and the anal fin ten rays of the same colour. When the scales were carefully taken off with a knife, the obscure red spots became of a fine vermilion, and were nineteen in number; and ten obscure oval bars of a dusky bluish colour appeared, which crossed the lateral line. In a young fry which has not acquired the scales, these bars are very distinct.

The accompanying cut and description are both borrowed from Yarrel's "British Fishes;" the latter as quoted from Dr. Heysham's catalogue.

To render these facts yet more certain, in the autumn of 1835, Thomas Upton, Esq., of Ingmire Hall, near Kendal, began to enlarge a natural lake on his property, and in the spring of 1836, some Pinks from the Lune, a Salmon river in that vicinity, were put into it.

This lake, which is called Lilymere, has no communication with any other water, by which the fish once introduced can get out, or any fry from other waters get in. The Pinks, when put in, were certainly not above two or three ounces each in weight. Sixteen months afterwards, a friend of Mr. Upton's being on a visit to him, caught with a red palmer-fly two

Salmon Peel, in excellent condition, silvery bright in colour, measuring fourteen inches in length, and weighing fourteen ounces; one was cooked and eaten, the flesh pink in colour, but not so red as those of the river, well-flavoured, and like that of a Peel.

In the month of July, 1838, eleven months after, another small Salmon was caught, equal to the first in condition and colour, about two inches longer, and three ounces heavier. No doubt was entertained that these were two of the Pinks transferred to the lake in the spring of 1836, the first of which had been retained sixteen months, and the latter twenty-seven months, in fresh water.

Farther than this, it was found that, in the river Hodder, the Pinks in April are rather more than three inches long, and that at the same time Smalts of six and a half are also taken, with the colours altered as above, and ready to migrate. In July, the Pink measures five inches, and the Smalts have then left the river.

Dr. Knox seems to have erred merely in supposing that the Pinks, the size of the little finger, were from the ova hatched in April, when they were probably from an earlier hatching of fish, which spawned at a more remote date.

It seems, however, to be clearly and certainly established by these experiments, that the Smalt, or Laspring, as they are sometimes called, which descend the rivers every spring toward the middle of May, are a whole year older than the Pinks, which are taken in the same waters, at the same time, and by the same fly.

With regard to the later growth of the Salmon, I am not of

opinion that the lake experiments prove much, if anything, either *pro* or *con*; since it is a known and established fact, that salt-water has a recuperative influence upon the mature fish which run down the rivers exhausted by spawning, and also a certain tendency to increase the growth of the young fish which descend the streams, Smalts, as it now appears, in their second year, of six or seven inches length, and about as many ounces weight, and return Peel or Grilse, varying from two to eight pounds.

It must be observed here, that Grilse is the correct name of the fish on its return from the sea in its second season, and that *Peel* is merely a fishmonger's term for a small Grilse not exceeding two pounds' weight.

That the identical Smalt of six or seven ounces do return, after two or three months' absence in the sea, as Grilse of as many pounds' weight, is proved beyond all dispute; Smalts innumerable having been taken, marked with numbered tickets of zinc attached to the rays of their dorsal fins, set at liberty, and recaptured *Grilse*, varying from two to eight pounds, in the autumn of the same year. The same experiment, with the labels unremoved, shows that the same Grilse, descending the stream of unincreased magnitude in the spring of his third year, returns in that third autumn a fish of sixteen, and upward to twenty-five, pounds' weight.

I hold, therefore, that the argument is conclusive, so long as it is founded on a comparison between fish in a state, which whether they be confined or at large, never visits the sea. Beyond that the analogy ceases. It remains to be seen whether the Salmon confined to fresh water will ever attain the size of

those which run to and fro, from the fresh to the salt; I greatly doubt it; and, with Mr. Yarrel, I think it more than a dubious point, whether the fish, so stopped from migration to the sea, will ever acquire power to reproduce their own species.

It is a singular fact, that the Salmon propagates its kind before it is adult—the Grilse, on its return from the sea in its second year, having the roe and milt far advanced, and spawning that same autumn. The ova in the Grilse differ not in size, but in number only, from those of the adult Salmon of a year's later growth, and there is no known difference between the fry of the young and full-grown fish.

It will prove to be the fact, I have no doubt, that in this country these fish spawn earlier in the season than in Great Britain; indeed, they must do so, for in the month of January the head-waters of the rivers which they frequent are masses of solid ice; and I presume it will be found that the ova are deposited and covered with gravel in the months of September and October, and in all probability that the parent fish return to the salt-water the same autumn, or early in the winter, before the closing of the rivers. This is, however, little important.

I now come to the second point, proved beyond all doubt by these experiments, viz., that the Salmon, in the first stage of his existence, is, to all intents and purposes, what is commonly called a Parr.

Most, if not all of my readers, are probably aware that, in particular streams of Great Britain, there has been found invariably a small fish of the Salmon family, never attaining to any considerable size or weight, and distinguishable from Trout only

by the presence of the bluish-grey or olive transverse bands alluded to above, and figured in the cut of Pinks, at the head of this article; as also again in the plate at the head of that on the Brook Trout (*Salmo Fontinalis*), next following.

Concerning this little fish, there has been a continual doubt, and a dispute of many years' standing, some persons maintaining that it was a distinct and reproductive species of the *Salmonidæ*, which they termed variously Parr, Samlet, Brandling, and so forth; others, from its never being taken of any size, have believed it to be an unproductive cross, or mule, between the Salmon and the Common Trout, the Sea Trout and Common Trout, &c., &c.; and others yet again, that it was neither more nor less than a young Salmon.

In proof of this, it was adduced that Parr had been marked and retaken as Grilse.

But in reply, it was stated that Parr had also been marked and retaken as Bull Trout (*Salmo Eriox*), and Salmon Trout (*Salmo Trutta*); whence it was argued that the fish marked had been marked carelessly and injudiciously, and were not Parr at all, but Smalts, or fry of some of the other *Salmonidæ*. Mr. Yarrel admits that he has seen these vertical marks in the young of the Salmon, Bull Trout, Parr, Common Trout, and Welsh Charr; but still maintains the existence of the Parr as distinct, principally on the ground that the Parrs are taken abundantly even in autumn, not exceeding five inches in length, long after the fry of the larger migratory species have gone down to the sea.

This is in the body of the work, written previous to the experiments made by Mr. Shaw, and this Mr. Yarrel there

considers to be a sufficiently obvious proof that the Parr is not the young of the Salmon, or indeed of any other of the larger *Salmonidæ*.

The reason is of course annihilated by the proved fact, that the Pinks, which remain in fresh water all the first year, are young Salmon, Parr-marked; whereas the young Salmon-fry, *Smalts*, formerly supposed to be the young fish of that year, all of which have gone down the river to the sea, are in truth the fish of the preceding year.

Similarly is the question settled with regard to the existence of Parrs in streams of the Western Isles which are never visited by Salmon, these being, in all probability, the Brook Trout in the Parr stage of its existence.

And so again the fact that there are *lakes* in the same islands frequented by the Salmon and Sea Trout, in which Parrs are never found—because the young fry, while in the Parr, or transversely-banded form, keep in the swift cold streams, and do not descend to the lakes.

It now appears to be certain, or as nearly certain as anything can be, which is not positively proved, that *every* species of the *Salmonidæ* is at one period a banded-fish or Parr.

This is known as an authenticated fact of the Salmon, Salmon Trout, Bull Trout, and common English Trout, as well as of the Welsh Charr, as admitted by Yarrel.

Mr. Agassiz has figured the Hucho (*Salmo Hucho*), and the Continental Charr, which he esteems identical with the Northern Charr of England (*Salmo Umbla*), in the same stage—the other characteristics of the different fish being unmistakable and evident — with the transverse bars. The same distinguished

naturalist has taken the great Lake Trout, or Mackinaw Salmon (*Salmo Amethystus*), and the Brook Trout (*Salmo Fontinalis*), which abounds in all small streams, wherein it is bred, in this same form.

There only remain to be accounted for some two or three species: the great Grey Trout of Britain, the Sea Trout (*Salmo Trutta*), and the Silver Trout (*Salmo Lacustris*), of continental Europe; and on this continent, the Siskawitz (*Salmo Siskawitz*), and the Lake Trout (*Salmo Confinis*), of Dekay, if the latter be a distinct fish from *Amethystus*.

No especial search has been instituted for the fry of any of these fish last named; so that the non-discovery goes no way to prove their non-existence; on the contrary, all analogy goes to show that they will be discovered in time.

As it now stands, of fourteen the most strongly-marked *Salmonidæ*, nine have been clearly traced to this form; and the five missing species are either analogous, as the three European species, or closely congenerous, as the two American Lake Trout, to one species *Amethystus*, which is shown to be no exception to the rule.

Every migratory species of *Salmo* is found in this stage; and one of the five or six non-migratory. All analogy, therefore, goes to show that these species will be found, on research, not to deviate from the rule of their order.

Mr. Shaw goes farther, and argues that no such perfect fish as the Parr exists; and that *all* the fish so named by different observers are in truth the young of different species of the Salmon family.

Against this fact, Mr. Yarrel reclaims; and justly remarks

that "this is not conclusive evidence of the non-existence of a distinct small fish, to which the name of Parr ought to be exclusively applied; it rather shows the want of power among general observers to distinguish between the young of closely-allied species, three or four of which are indiscriminately called Parrs."

This is certainly true logic.

The fact that all the young of all the *Salmonidæ* are what have been called Parrs, is no proof that all Parrs are young and immature fish.

This matter, though, as it now stands, cleared of all the absurd theories concerning cross-breeding between Salmon, Sea Trout, Grayling, and Common Trout, being set aside, is of easy proof.

It only rests to show the male and female Parrs full of ova, ready for spawning, and the question is settled.

In connection with this, it is fair to state, that Dr. Heysham, of Carlisle, in England, who is said to have devoted particular attention to this fish, which is there called Brandling or Samlet, observes that "The old Samlets begin to deposit their spawn in December, and continue spawning the whole of that month, and perhaps some part of January. As this season of the year is not favourable for angling, few or no observations are made during these months. As soon as they have spawned they retire, like the Salmon, to the sea, where they remain till the autumn, when they again return to the rivers."

After a number of farther observations concerning the young fry of the supposed Parr, their sizes, seasons, &c., he concludes by these words—"In short, we see Samlets of various sizes—we

see them with milt and roe, in all the various stages, and we see them perfectly empty; all which circumstances clearly prove that they are a distinct species."

Clearly, indeed; if it appear that these circumstances can be authenticated; but this I, for the present, doubt—First, because if there had been visible facts, the theory never could have been started of their being unproductive mules. Second, because Sir William Jardine, after examination of the Parr of the Tweed, speaks of it as still uncertain whether it may not be the young of the Common Trout (*Salmo Fario*); and for this reason, that though he has found males full of milt, he never has seen females with the roe in an advanced state; and, furthermore, distinctly avers, that "they have not been discovered spawning in any of the shallow streams or lesser rivulets, like the Trout."

Sir William, however, still leans to the opinion that there is a distinct species, in which the transverse markings are permanent, which reproduces its own kind, and never grows to a greater size than eight or nine inches; and this he would retain under the title given to it by Ray, of *Salmo Salmulus*.

Mr. Yarrel is of the same opinion; and has certainly shown decidedly that it is not a hybrid, or a species of which there are no females, as had been surmised; since of three hundred and ninety-five Parrs, or Samlets, examined by Dr. Heysham, one hundred and ninety-nine were males, and one hundred and ninety-six females.

The great point, however, is this, which is now, I think, perfectly clear, and which at once dispels all the mystery of the question, namely, that the young of all the *Salmonidæ*—not *several* only, as Sir William Jardine and Mr. Yarrel state, but

all—have, in their extreme youth, transverse bluish or olive-coloured markings; that they have all been confounded with one another, and—if there be such a fish—with the Parr proper; and that from this confusion, and the want of discrimination on the part of the observers, have arisen all the contradictory accounts of Salmon, Salmon Trout, Bull Trout, and Common Trout, raised from the veritable Parr.

Whether there do or do not exist a very small distinct species of *Salmo* in Great Britain, which retain these marks to maturity, is a matter of little comparative moment, though interesting to the naturalist. The first question was of the greatest importance, as involving the whole subject of reproduction of species; inasmuch as the facts, as asserted and formerly believed, were directly analogous to this, that the eggs of a barn-door fowl, of one laying, were hatched bantams, quail, guinea-hens, pea-fowl, and any other gallinaceous fowl you please.

On this continent, assuredly, there is no distinct Parr, although undoubtedly it will appear hereafter, that like the young of every one of the family, like the true Salmon, and the greater Lake Trout, and the Brook Trout, the other species without exception have the Parr markings.

On this topic I have dwelt somewhat at length, yet I trust not so long as to weary my readers, the great interest of the point at issue, and the almost interminable discussion which has been maintained on the subject, rendering me peculiarly anxious to adduce something new and to the point; which, thanks to the kind assistance of my friend, Mr. Agassiz, I trust I have succeeded in doing.

I may here venture to add that the distinguished gentleman I have just named, is inclined to incredulity as regards the existence of a distinct species of Parr.

I shall now recur to the experiments on the ova of Salmon; first, for the purpose of showing how they may be brought into direct practical utility, and rendered subservient to the pleasure of the angler, as a method of stocking inland waters; and, secondly, of pointing out how easily experiments might be made in this mode, as to the hybridisation of fishes, and the rearing new species of mules, or ascertaining that they cannot be reared, by the commixture of the milt and roe of various distinct species of the same family, in small tanks, fed by running brooklets.

It has been shown above, that the impregnated spawn of any two live breeding fishes of the same family may be artificially hatched and preserved in waters other than those in which the parent species are wont to live; as even the Salmon in fresh water.

I shall now proceed to show that the same result may be obtained by the commixture of the milt and roe, in aërated water, of dead fishes recently taken.

It is absolutely necessary that the water should be aërated, or highly supplied with oxygen. For it is for the purpose of finding water in this condition, that the Salmon, the Shad, the Bass, the Smelt, and all those fish which resort to fresh waters for the purpose of spawning, run to the shallow, pure, and swiftly-flowing brooks, to which their rapidity and frequent falls impart purity and vitality, by mingling them with the atmosphere. In the same manner, the fish of the sea resort for the deposit of

their ova to the weedy shoals, where the vegetables, in process of their growth, under the influence of the sun, distribute air through the waters around them.

"The science required for this object"—that is to say, the raising foreign fishes for the stocking of home waters—thus speaks Sir Humphrey Davy, in his delightful work, "Salmonia"—"is easily attained, and the difficulties are quite imaginary. The impregnation of the ova of fishes is performed out of the body, and it is only necessary to pour the seminal fluid from the milt upon the ova in water. Mr. Jacobi, a German gentleman, who made, many years ago, experiments on the increase of Trout and Salmon, informs us, that the ova and milt of mature fish, *recently dead*, will produce living offspring. His plan of raising Trout from the egg was a very simple one. He had a box made with a small wire grating at one end in the cover, for admitting water from a fresh source or stream, and at the other end of the side of the box there were a number of holes, to allow the exit of the water; the bottom of the box was filled with pebbles and gravel of different sizes, which were kept covered with water that was always in motion. In November, or the beginning of December, when the Trout were in full maturity for spawning, and collected in the rivers for this purpose, upon the beds of gravel, he caught the males and females in a net, and by the pressure of his hands received the ova in a basin of water, and suffered the milt, or seminal fluid, to pass into the basin; and after they had remained a few minutes together, he introduced them upon the gravel in the box, which was placed under a source of fresh, cool, and pure water. In a few weeks the eggs burst, and the box was filled with an immense

number of young Trout, which had a small bag attached to the lower part of their body, containing a part of the yolk of the egg, which was still their nourishment. In this state they were easily carried from place to place, in confined portions of fresh water, for some days, requiring apparently no food; but after about a week, the nourishment in their bag being exhausted, they began to seek their food in the water, and rapidly increased in size. As I have said before, Mr. Jacobi assures us that the experiment succeeded as well with mature fish that had been killed for the purpose of procuring the roe and the milt, these having been mixed together in cold water immediately after they were taken out of the body. *I have had this experiment tried twice,*" continues Sir Humphrey, speaking in his own person, "*and with perfect success;* and it offers a very good mode of increasing to any extent the quantity of Trout in rivers or lakes; for the young ones are preserved from the attacks of fishes, and other voracious animals or insects, at the time when they are most easily destroyed, and perfectly helpless. The same plan, I have no doubt, would answer equally well with Grayling, and other varieties of the *Salmo* genus. But in all experiments of this kind, the great principle is to have a constant current of fresh and aërated water running over the eggs."

Now it is manifest from this, that any person resident in the near vicinity of any lake or river, abounding in any species of this family, the Common Trout, the True Salmon, the Lake Trout, and probably the Otsego Bass (*Coregonus Otsego*), which is one of the same family likewise, having also the command of the smallest possible source of fresh running water, can raise, in the space of a few weeks or months, an indefinite number of

young fish, of any of these varieties, which, during the first week or ten days, can be removed to any distance that can be reached in that time—and, in these days of steam velocity, what distance cannot be reached?—in any cask, jar, or other vessel, capable of containing a few gallons of water.

There would not in this manner be the smallest difficulty, and very small trouble or expense, in translating the Mackinaw Salmon and the Siskawitz Trout from Lakes Huron and Superior, to the inland waters of New York, New Jersey, and Pennsylvania,—not the smallest difficulty in introducing the true Salmon from the Penobscot or the St. John, to any lake, river, or stream in the Middle States; and, it having been proved by the experiments of Mr. Upton in Lilymere, as recorded above, that the Salmon will live and preserve its excellence in fresh water, entirely debarred from egress to the sea, would it not be a highly interesting, and, if successful, valuable experiment, to attempt its introduction into the hundreds of limpid lakelets which gem the inlands and uplands of our Northern States?

Again, as it is well known that all the migratory fish, like the birds of passage, return, whenever it is possible, to the streams wherein they were themselves bred, to breed, it seems to me that it would be well worth the trying whether these streams of ours here, to the southward of Maine, which, within a century or two, teemed with Salmon, but in which one is now never seen, might not be colonised and re-stocked with the delicious fish.

There is no plausible reason why the Pinks which should be transported to the Upper Hudson, and should there remain till

they become Smalts, should not return as Grilse to the scenes of their childhood.

Nor do I see any good reason why they should not continue to breed, and to frequent any river into which they should be so introduced.

The cause of their desertion of these rivers is inexplicable. It has been attributed to steamboats, but that is ideal; for the Tay, the Tweed, and the Clyde, and half a dozen other English and Scottish rivers, which still abound in Salmon, are harassed by more steamboats, hourly, than are the Kennebeck and Penobscot now, or than were the Hudson and Connecticut at the time when the Salmon forsook them, daily.

I think it, myself, far more probable that they were poisoned, and driven from the head-waters and tributaries, in which they were wont to spawn, by the sawdust, especially the hemlock; and that the stock which were used to run up these estuaries having become extinct, the traditional instinct is lost, and there are no fish left which know the way to our waters.

If this be a true reason—and, the known instinct of the animal considered, it is as plausible a conjecture as any other—it is certain that many rivers, whose waters a few years ago ran turbid with sawdust, and whose every tributary resounded to the clack of the saw-mill, now again run as limpid as ever, and are guiltless of saws, as well as of the timber to supply them.

I contend, therefore, that there is no analogy against, but much in favour of, the possibility of re-stocking the southern rivers of the Middle States with Salmon, which should return, and breed in them, year after year.

Nor, looking to the vast profit directly arising from such

fisheries, can I doubt, particularly when regarding the action of the New York legislature in regard to a fish so comparatively worthless as the Carp, that, could such a thing be effected as the recolonisation of our rivers with Salmon-fry, some action of the legislatures would ensue for their protection, until such time as they could be fairly naturalised.

Whether *this* be feasible or not, it is *certain*, that to every inland spring-lake, from the western line of Pennsylvania to their easternmost and northernmost limits, every variety of Brook Trout and Lake Trout can be introduced with ease, and at a trivial expense; nor these only, but the true Salmon likewise. And I strongly believe that, when the extreme simplicity of the method, and facility of the means, become generally known, the true Salmon will be introduced, at least, into the lakes of Hamilton County, as well as into many other inland waters. In fact, running as he does now into Ontario, there is no reason why he should not be safely lodged, beyond the power of returning, above Niagara, and compelled to fill Erie, Michigan, Huron, and Superior with his noble race.

A few years since, he found his way into Seneca and Cayuga Lakes, and if modern improvements—heavens! how I loathe that word!—have not excluded him, he finds his way there yet, and thence might be propagated, *ad infinitum*, through the whole region of the lesser lakes.

The next point of great value to be attained by the use of experiments of this nature, is the ascertaining how far fish are capable of hybridisation, and possibly the creation of new and interesting varieties, besides the elucidation of sundry now mooted questions concerning the manner in which various

species, now distinct, have arisen, and whether in truth they are distinct or no.

Now, it is of course just as easy to commingle, in the manner heretofore described, the milt and roe of two distinct varieties, as of the same species; and the consequences of such an admixture would excite the attention of the whole scientific world.

Anywhere in the northern and north-eastern part of the State of New York, anywhere in the northern parts of New Hampshire, Vermont, or Maine, it would be the easiest thing in the world to procure the common Lake Trout (*Salmo Confinis*), if not alive, at least within a few hours after his capture, and the common Brook Trout, dead or alive, in any desirable quantities.

There is little if any difference in the spawning period of these two *Salmonidæ*, so that it would require very little pains or attention to procure the males and females under the circumstances proper for the making of such an experiment, which might be performed precisely as I have described it above; trying, in different instances, the males and females of the two species alternately.

There are thousands and tens of thousands of little tumbling transparent rills, throughout that country—scarcely a farm without a dozen such—which have numerous natural basins in their courses, each of which, with the aid of a few hours' work employed in raising a timber dam, and applying a grate at the entrance and egress of the stream, would constitute as perfect a store-pond for the making of such experiments as could be erected by the wealth of Crœsus; with the advantage, too, of having the fish requisite for the tests existing, in a state of

nature, within a few miles, perhaps within a few hundred yards, of the scene of action.

One place already made to hand, requiring no improvement or alteration, strikes me on the instant; and one familiar, I doubt not, to very many of my readers. I mean Barhydt's Trout-ponds, near Saratoga Springs, where the Brook Trout abound, in what perfection all epicures well know, and where the Lake Trout could be obtained, with small trouble, alive, from the waters of Lake George, and recently dead, without any trouble at all. Whether the latter fish is found in Saratoga Lake or not, I cannot say; but I should rather suppose it is; if so, the matter would be yet further simplified.

The apparatus described above, which could be made at the cost of a few shillings, might be placed in the runway, between the upper and lower ponds, so as to allow that beautifully clear and sparkling source to bathe the ova constantly, until hatched; after which the fry should be kept in confined vessels until the yolks of the egg were absorbed, when they should be transposed to one or other of the tanks, fed by the streamlet.

In the same manner, in many places, especially in Maine, near the west branch of the Penobscot, where it flows within a few miles of Moosehead Lake, the former a favourite spawning station of the true Salmon, the latter abounding in the large Lake Trout, weighing sometimes up to thirty or forty pounds, it might easily be ascertained whether a hybrid could be obtained between these two fishes; and so, perhaps, in a greater degree upon the shores of the great lakes, where both these species are taken, eastward at least of Niagara.

A similar trial might be made with the ova of the Salmon,

and of the Common Trout; which could be done with greater facility than the other, from the fact that the two species are constantly found naturally co-existent in the same waters.

Should any of these experiments result in the production of hybrids, another interesting question would arise, as to whether the males thus produced should be again capable of reproducing their own species. Should this be the case, it would go very far toward the breaking up the whole theory of distinct species of this family, and proving them to be merely accidental varieties, casually produced at first, and having become, in process of generations, capable of transmitting their own peculiar type to their progeny—as is the case clearly with the various breeds of dogs, horses, cattle, and other domestic animals, which, so long as they are preserved unmixed, will produce like of like, but which, if interbred with other close-kindred races, will produce a mongrel, but not a hybrid—one, I mean, which is capable of reproduction.

Thus Shetland ponies breeding together will produce Shetland ponies; and blood-horses of the Arab stock, blood-horses.

Intermix these, and you shall have a cross-bred offspring, which is not, however, a hybrid, like the produce of a horse and an ass; for it is capable of breeding again, with its own type, or with either of the parent races, or with any other pure horse.

And so of hounds, setters, greyhounds, and all the varieties of domestic dogs, so long as they are interbred among themselves; but the moment they are associated with the wolf, fox, jackal, dingo, or any of the congenerous though *distinct* races, they will breed with them, it is true, but the progeny will be truly hybrid and barren.

If, therefore, it should be proved on experiment, that the various distinct species of the *Salmonidæ*, as they are now held to be, will, when interbred, produce young capable of reproduction, it would go very far to establish the fact that the distinctions are not distinctions, but merely varieties.

I must not, however, be understood as saying that the success of experiments, and the establishment of such a result as I have supposed, would go at all to prove that such intermixture of varieties occurred, or such cross-breeds were produced in a state of nature; far from it.

We know, that in vegetables, hybrids can be, and are, readily produced by artificial means, which will not occur once in a century, perhaps never would occur at all, were the plants left to the operation of nature.

Nature abhors monstrosities; and the proverb that the "cat will follow kind" is of older wisdom than Will Shakspeare's. Man's freaks have raised mongrels between the lion and the tigress; Nature's, so far as we know, or can conjecture, never. And always in a wild state a hundred circumstances, such as different size, different habits, haunts, associations, and last, not least, fear—one species of the same family being habitually the devourer of his relatives—will prevent the occurrence of such admixtures between animals.

It would require many and strong evidences to make me believe that the Brook Trout of ordinary dimensions would trust itself willingly within such distance of the Salmon, or Lake Trout, as would permit their ova to commingle in a single furrow.

Nor, indeed, do I believe, myself, that the result of such

experiments as these last-named would be *success;* although I gather from a note of Dr. Bethune's, to his beautiful edition of Walton, that he rather leans to the opinion that the various species of this family were more capable of intermixture, and more accustomed to interbreed, than I am disposed to credit.

At all events, there would be great interest and entertainment in the instituting such a series of experiments; and the result, whatever it should be, could not fail of importance.

That those which I first mentioned are eminently practicable, is not to be doubted; and there is strong reason for believing that this science was fully understood, and constantly practised, like many other good things now forgotten, or, as we flatter ourselves, recently discovered, by the monks of old.

That Carp were introduced from the continent to England, by the monks, is nearly certain; this, however, could be accomplished without recourse to any artificial modes of producing or raising the young fry. There are, however, many and powerful reasons for believing that the Grayling (*Thymallus Vexillifer*), the Charr (*Salmo Umbla*), the Gwyniad (*Coregonus Fera*), and perhaps, also, the Vendace (*Coregonus Villughbii*), the Pollan (*Coregonus Pollan*), and the Powan (*Coregonus Lacepedei*), were also introduced by the same agency from foreign countries. This belief is supported by the fact, that these fish exist only in isolated, and often distant waters; sometimes in only one of two neighbouring rivers, whereof that which contains them is apparently the least adapted to their habits; but always in such waters as had many or distinguished monastic institutions on their banks. While England was Catholic, great attention was paid to the raising and fattening the choicest varieties of fresh-water fish;

an art which has sunk into neglect, partly owing, doubtless, to the abolition of fast-days, and partly to the great facility with which the finest sea-fish are transported throughout the country.

If the fish I have last mentioned were so introduced, it must have been by some such process as that which I have here described; for they are all of so sensitive and delicate a nature, that it is with the greatest difficulty they can be kept alive for an hour or two after being captured, and that only by a constant change of fresh spring water; circumstances which would have made it utterly impossible that they should have been transported from the continent, after they had arrived at maturity.

Even to this day, in Austria, Illyria, and parts of the Tyrol, the greatest attention is paid to the nurture of the most delicate fresh-water fishes in confined situations; and Sir Humphrey Davy states in his "Salmonia," that, "at Admondt, in Styria, attached to the magnificent monastery of that name, are abundant ponds and reservoirs for every species of fresh-water fish; and the Charr, Grayling, and Trout are preserved in different waters—covered, enclosed, and under lock and key."

And now having at length come to the end of this sort of dissertation on the breeding, growth, and specific generation of the Salmon, I shall briefly consider his characteristics, distinguishing marks and habits, before passing to his nearest relation, in this country at least, the Brook Trout.

The Salmon (*Salmo Salar*), of Linnæus and all authors, is, I have observed before, a soft-finned fish of the Abdominal division, his ventral fins being attached to the parietes of the belly. His

head is smooth, his body scaly. His dorsal fins are two in number, the first supported by soft rays, the second adipose or fatty, without rays; he has teeth on the vomer, both palatine bones, and all the maxillary bones. His branchiostegous rays vary in number, generally, from ten to twelve, but are irregular, and do not always coincide on the two sides of the head. The teeth on the vomer rarely exceed two in number, and there is frequently but one; a sign which is thought to distinguish him from the Salmon Trout, and other connected species.

The length of his head, to the whole length of his body, is as one to five; the eye small and nearer to the point of the nose than to the posterior edge of the gill-cover. The pectoral fin is two-thirds the length of the head, and has twelve fin-rays. The ventral fin lies in a vertical line under the middle of the dorsal fin, and has nine rays; the anal fin commences about half-way between the origin of the ventral and caudal fins, and has nine rays; the caudal fin, or tail, has nineteen rays; when the fish is very young, it is much forked, but as it advances in years, the central caudal rays grow up; and it becomes nearly square by the end of the fourth year. The first dorsal fin has thirteen rays, all of which, with the exception of the two first, are branched. The body is long, and about equally convex above and below; the lateral line dividing the body nearly equal, and, to a certain degree, parting the dark hue of the back, and silvery whiteness of the belly.

The form of the gill-covers, shapes of the fins, and relative proportions of the whole fish, will be readily understood by reference to the cut at the head of this article, which will give a more correct idea than any written description.

The Salmon is, to all intents, a fish of prey; and to this end every part of his frame is adapted, in the most perfect manner, by the master-hand of nature. The elongated form of his body tapering forward and aft with the most gradually curvated lines, like the entrance and the run of some swift-sailing barque, enables him to glide through the swift water in which he loves to dwell, displacing its particles with the least resistance; the powerful muscles and strong branched rays of his broad and vigorous caudal fin serve as a propeller, by which he can command an immense degree of momentum and velocity, and ascend the sharpest rapids.

No one who has once felt the arrowy rush of a fifteen-pound Salmon, when struck with the barbed steel, will be inclined to undervalue his strength, his speed, or his agility; and the numerous and astonishing leaps which he is capable of making, to the height of many feet above the surface, either in attempting to rid himself of the hook, or in surmounting obstacles to his upward passage, in the shape of dams, flood-gates or cataracts, prove the exceeding elasticity, vigour and strength of his muscular system.

The prodigious power of sinew exhibited in the lithe and springy limbs of the quadrupeds of prey of the feline order is not superior in its degree to that possessed by this, the veritable monarch of fresh-water fishes; nor are the curved fangs and retractile talons more efficacious instruments to the lion and the tiger for the seizure of their victims, than are the five rows of sharp hooked teeth, with which the whole mouth of the Salmon is bristled, for the prehension and detention of his slippery and active prey.

Nor is he less bold, fierce, and persevering, than he is well provided with the means of pursuit and the instruments of destruction.

As a proof of the strength and courage of this family, it is recorded by Mr. Yarrel, that a Pike and a Trout, put together in a confined place, had several battles for a particular spot, but the Trout was eventually the master. The comparative size of these fish is not mentioned, but of course there was something approaching to an equality, as the Pike constantly preys on small Trout.

It is very certain that, although great havoc is made among Salmon by the seal and the otter, there is no fresh-water fish which would venture on attacking them, not even the Pike, at his largest size.

The Salmon grows to a very large bulk, though the average run is probably from eight to sixteen pounds; and as is the case with many kinds of fish, the middle-sized, of twelve or fourteen pounds, are generally considered the best in an epicurean point of view, and afford, commonly speaking, nearly as much sport when hooked, as the monsters of the species.

"The present London season, 1835," says Mr. Yarrel, speaking on this point, "has been more than usually remarkable for large Salmon. I have seen ten different fish, varying from thirty-eight to forty pounds each." A notice appeared in the public papers of one that weighed fifty-five pounds. Salmon, however, of much larger size have been occasionally taken. Mr. Mudie has recorded one of sixty pounds. In a note to the history of the Salmon, in several editions of Walton, mention is made of one that weighed seventy pounds; Pennant has

noticed one of seventy-four pounds: the largest known, as far as I am aware, came into the possession of Mr. Groves, the fishmonger in Bond Street, about the season of 1821. This Salmon, a female, weighed eighty-three pounds; was a short fish for the weight, but of very unusual thickness and breadth. When cut up, the flesh was fine in colour, and proved of excellent quality.

"The Salmon of the largest size killed by angling, of which I have been able to collect particulars, are as follows:—In the Thames, October 3, 1812, at Shepperton Deeps, Mr. G. Marshall, of Brewer Street, London, caught and killed a Salmon that weighed twenty-one pounds four ounces, with a single gut, without a landing net."

Sir Humphrey Davy is recorded as having caught an immense fish, weighing about forty-two pounds, immediately above Yair-bridge, and captured him after a severe struggle.

Mr. Lascelles, in his "Letters on Sporting," says, "The largest Salmon I ever knew taken with a fly was in Scotland; it weighed fifty-four pounds and a half."

In this country, except in Canada, where there are many excellent and enthusiastic Salmon-fishers, this noble sport is but little followed, and there are few records extant of the number or size of fish taken.

It will be sufficient to observe, however, that in the St. Lawrence and its tributaries, especially those great streams coming in from the northward, the Saguenaw particularly, the number and size of the Salmon are at least equal to those in the finest English or Scottish rivers; an intimate friend of my own having killed within a few years, on the St. Lawrence, near the mouth

of the river named above, twenty fish in a single day's fishing, one of which weighed above forty pounds, while the smallest, if I am not greatly mistaken, exceeded sixteen. This was all done with the fly.

"It may be stated generally," says Yarrel, "that Salmon pass the summer in the sea, or near the mouth of the estuary; in autumn they push up the rivers, diverging to their tributary streams; in winter they inhabit the pure fresh water, and in spring again descend to the sea."

These habits of the fish are unquestionably more or less modified by climate and other influences, and it is certain that in America the Salmon enter the rivers, and begin to run up them in June; by September they have arrived at the shallow and gravelly head-waters of the streams, and are preparing to spawn; and I presume that as soon as that operation is finished they return to the salt water to recruit, and consequently that here they do not pass the winter in fresh water.

It has been supposed by many observers, that the Salmon do not go very far out to sea, but remain constantly within soundings, and not very far distant from their native streams, to which, whenever it is practicable, they return; this is, however, very questionable.

Many are taken on the British coasts, while running along the shore in the summer months, and searching for the mouths of the rivers which they desire to ascend; but very few are taken here until they have made their way up the estuaries, when they are captured in great numbers by means of stake-nets.

They do not, it is true, invariably return to the streams in

which they were bred, although they do so, beyond doubt, in a very great majority of instances; but it would appear from the observations of Dr. Heysham and Sir William Jardine, that if they have roved to a very great distance from the estuary of their own stream, they betake themselves to the mouth of the first river they reach, if its temperature and the condition of its waters suit them.

Many Tweed Salmon are occasionally taken in the Frith of Forth, and it is even said that in seasons when the Forth fisheries are unusually successful, those of the Tweed are as much the reverse. Sir Humphrey Davy is of opinion that the taste of the waters of different rivers, according as they are impregnated with different substances, and the effect produced by them on the bronchiæ of the fish in the act of breathing, are the guides by which the Salmon are led back to the streams to which they have been accustomed; and he accounts for their being occasionally mistaken, by the fact that such mistakes frequently occur during great floods, connected with storms, or violent motion in the waters near the shore; by which the components of the waters are disturbed, and their flavour consequently altered. In confirmation of this view, he relates that he "remembers in this way, owing to a tremendous flood, catching with the fly a large Salmon which had mistaken his stream, having come into the Bush, near the Giant's Causeway, instead of the Bann. No fish can be more distinct," he proceeds, "in the same species, than the fish of these two rivers, their length to their girth being in a ratio of 20·9 and 20·13."

I am not, however, inclined to adopt this explanation. For

it seems to me that in migratory animals of all kinds, and indeed, in some instances, in domestic animals likewise, that there is some sort of sixth sense, or at least some entirely distinct power, not acquired by means of any of the senses of which we are cognizant, nor acting like reason, by means of deduction, which enables them to steer their course through countless leagues of air or water, or over miles of uncultivated land, to the places where they were bred, or to which their instincts compel them to resort for the purpose of wintering, obtaining food, or the like.

And I no more believe that Salmon are guided back to their native rivers by the flavour of the waters, than I do that the swallow finds his way from Africa to Europe, or from Southern to Northern America, by the scent of the tainted atmosphere.

I am disposed, therefore, to believe with Yarrel, that this occasional variation from their ordinary custom is caused by their having strayed to such a distance from their native estuaries, that when the time comes for returning, they prefer taking the first suitable river, to make longer delay.

The female fish, it is observed, are the first to enter the rivers, and the Grilse, or young fish, which have not yet spawned, come in earlier than the full-grown Salmon. They swim with great rapidity, shoot up the most oblique and glancing rapids with the velocity of an arrow, and frequently leap falls of ten or twelve feet in perpendicular height.

It was formerly believed that, in making their prodigious springs, the fish takes its tail in its mouth, and shoots itself like a pliant stick, the ends of which are forcibly brought together and then allowed to spring. This, however, is a fable; although,

in making these leaps, the muscular efforts of the animal do really impart to it a curvilinear form.

It is believed that the utmost limit of perpendicular height which they can attain is fourteen feet; but their perseverance is as remarkable as their strength, and though they fail time after time, and fall back into the stream below, they remain but a few moments quiescent, to recruit their strength, before they renew their efforts; and they generally succeed in the end, although they are said sometimes to kill themselves by the violence of their own efforts to ascend, and are frequently captured in consequence of falling on the rocks.

I once watched a Salmon for above an hour endeavouring to pass a mill-dam on the river Wharfe, a Salmon river in the West Riding of Yorkshire. The dam was of great height, thirteen or fourteen feet at least, and was formed with a sort of step midway, on which the water fell, making a double cascade. While I was watching him, the fish, which was, I suppose, of some seven or eight pounds, made above twenty leaps, constantly alighting from his spring about midway the upper shoot of the water, and being constantly swept back into the eddy at its foot. After a pause of about a couple of minutes, he would try it again; and such was his vigour and endurance, that he at last succeeded in surmounting the formidable obstacle; and to my great pleasure—for I had become really interested in his success—went on his way rejoicing.

The voracity of the Salmon is excessive; and yet, from the singular fact that their stomachs are invariably, or almost invariably, found entirely empty, none of the numerous examiners have been able to satisfy themselves what constitutes its prin-

cipal support. The stomach of the Salmon is, comparatively speaking, small; and Sir Humphrey Davy asserts that, out of many which he had opened, he never found anything in their stomachs but the tape-worms bred there, and some yellow fluid. This peculiarity must, I think, be in a great measure attributed to their rapid digestion. In this they differ greatly from the Salmon Trout, which is constantly found stuffed with food of all sorts, the remains of small fish, beetles, insects, and the sand-hopper (*Talitris locusta*), which would seem to be their favourite food.

Dr. Knox states that the food of the Salmon, and that on which all its estimable qualities and, in his opinion, its very existence depends, and which the fish can only obtain in the ocean, he has found to be the ova, or eggs of various kinds of *echinodermata*, and some of the *crustacea*. From the richness of the food on which the true Salmon solely subsists arises, at least to a certain extent, the excellent quality of the fish as an article of food. Something, however, must be ascribed to a specific distinction of the fish itself; for though he has ascertained that the Salmon Trout lives in some localities on very much the same kind of food as the true Salmon, yet under no circumstances does this fish ever attain the same exquisite flavour as the true Salmon.

Dr. Fleming states that their favourite food is the sand-eel. "I have myself," says Mr. Yarrel, "taken the remains of the sand-launce from their stomach." It is known, moreover, that they are taken in Scotland by lines baited with this brilliant and glittering little fish; as are the clean-run fish, fresh from the sea, with the common earth-worm. Mr. Yarrel mentions

an instance of one being taken in the Wye with a minnow; and Sir Humphrey Davy states he has fished for them in the Tay with great success, with the Parr, probably their own young fry, on spinning tackle.

For what they mistake the large artificial fly, by which they are so marvellously allured, taking it greedily, at a very short distance from the sea, we cannot determine. It is like nothing that has any existence in nature; and some persons have imagined that the Salmon is deceived by the gay colours and the ripple of the water, and so takes them for small fish. This is not credible, however; and the most plausible suggestion is that of Sir Humphrey Davy, that the fish, on their return from salt water, where, of course, they find nothing analogous to the natural or artificial fly, are actuated "by a sort of imperfect recollection of their early food and habits; for flies form a great part of the food of the Salmon-fry, which, for a month or two after they are hatched, feed like young Trouts,—and in March and April the spring flies are their principal nourishment. In going back to fresh water, they may perhaps have their habits of feeding recalled to them, and naturally search for their food at the surface."

While I am on this topic, it may not be uninteresting to quote the relation of an experiment tried with regard to the effect of various kinds of food on the Trout, as it is probable that, in fish so closely allied, the facts would not vary much in relation to the Salmon.

Mr. Stoddart relates this, in his "Art of Angling as practised in Scotland;" but the experiment was made in the south of England: "Fish were placed in three separate tanks; one

which was supplied daily with worms, another with live minnows, and the third with those small dark-coloured water-flies, which are to be found moving about on the surface, under banks and sheltered places. The Trout fed with worms grew slowly, and had a lean appearance. Those nourished on minnows, which, it was observed, they darted at with great voracity, became much larger; while such as were fattened upon flies only attained in a small time prodigious dimensions, weighing twice as much as both the others together, although the quantity of food swallowed by them was in no wise so great."

I may here observe, that from the fact of the Salmon roe, when preserved *secundum artem*, proving a most deadly and infallible bait for Salmon,—so much so, indeed, that the use of it in England is regarded as unsportsmanlike, and as an act of poaching,—there can be little doubt that the ova of fishes of all kinds contribute to their food, and add probably to the richness of their flesh.

I have now gone through, I believe, all that is most remarkable and most interesting in relation to the natural history, the form, habits, food, and seasons of this noble fish; but those who wish to study him for themselves, and read concerning him more at large than the space which can be allotted to a single specimen in this volume will admit, I refer to Yarrel's fine work on British Fishes; to that delightful work, "Salmonia," by Sir Humphrey Davy; and to Scrope's superb work, entitled "Days and Nights of Salmon Fishing," which, though I have not enjoyed an opportunity of examining it, I understand to be both the finest and the most complete treatise on this topic.

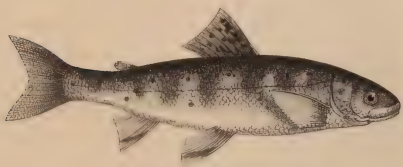
In a future portion of the work I shall enter at large upon all

the minutiæ of rods, tackle, bait, &c., necessary for the capture of the king of the fresh waters; as well as upon the science of taking him with the artificial fly, and all the appliances to that end. Until then, adieu to *Salmo Salar*.

THE BROOK TROUT.

THE COMMON TROUT.—THE TROUTLET.*

The New York Charr—Richardson. *Salmo Fontinalis*—Dekay.



Young Fry of Brook Trout.

Like the wild animals of this continent, almost without exception, the Trout of America is a distinct species from the fish of Europe; although, as in many other instances, the general resemblance is so strong, and the characteristic differences so narrow, that in the eyes of a common observer, judging from memory only, they appear to be identical.

Many sportsmen, who have been in the habit of killing this beautiful fish, both in this country and in Europe, are under the impression that there is no material difference; but such is not, in truth, the case; for as with the snipe, the teal, the widgeon, and many others of the birds of America, the characteristic marks of distinction, though easily overlooked at first, by a person unacquainted with them, when once pointed out,

* This name is applied by Dr. Dekay to the fish while in the state represented in the above cut.

cannot be readily mistaken, and, being both permanent and invariable, are quite sufficient to establish diversity of species.

The Brook Trout.

It is not in formation, moreover, or appearance only, but in very many of his habits, that the Brook Trout (*Salmo Fontinalis*), of America, differs from his congener, the Common Trout (*Salmo Fario*), of Europe.

Still, in general, his manners, his haunts, his prey, and his mode of taking it, so closely resemble those of the European Trout, that, as a general rule, the instructions given for the taking the one will be found successful as regards the other; and the flies, baits, and general style of tackle, as well as the science of capturing, with some few exceptions, which will be noticed hereafter, are nearly identical, on the two sides of the Atlantic.

As in Europe, so in America, although there are countless varieties of this most beautiful of fishes, almost indeed a variety for every stream, still,

according to the opinions of what I deem the best authorities, there is but one distinct species.

Endless attempts have been made in England to distinguish and define fresh species; but these have, in my judgment, all failed. According to Mr. Agassiz, whose opinion on this subject I consider paramount to all others, the Gillaroo, or Gizzard-trout, as it is sometimes erroneously called by the Irish, and some of the Scottish writers, is merely a casual variety of the *Salmo Fario*. The distinction, which consists principally in the thickness and induration of the stomach, having arisen from feeding on shell-fish, in the first instance, in individuals, has been gradually ingrafted on generations, until, in process of time, it has become a permanent type.

Although this variety is not known to exist on this continent, I have a very strong suspicion, from many circumstances which I have heard, on good authority, concerning the Trout of the Marshpee river, in Massachusetts, that on examination, it will be found to possess some of the leading peculiarities of this fish, particularly the indurated stomach. I have never had an opportunity of seeing the Trout of this river; but I know that it has many peculiarities of habit resembling those of the Gillaroo, especially that of feeding on shell-fish, a friend of mine having actually succeeded in taking them with small white crabs, at a time when they would look at no other bait.

I mention this, merely by way of suggestion, as offering an interesting subject of investigation for naturalists.

Sir Humphrey Davy, in his "Salmonia," rather leans to the idea that the Gillaroo is a distinct species, though he leaves it uncertain whether it may not be a permanent variety; his

principal argument being this, that he has caught small fish, no longer than the finger, with a fly, "which had as perfect a hard stomach as the larger ones, with the coats as thick in proportion, and the same shells within."

In external appearance, the Gillaroo is said to differ from the Common Trout "very little, except that they have more red spots, and a yellow or golden-coloured belly and fins, and are generally a broader and thicker fish." Again, Sir Humphrey admits that, "in a clear and cool river, fish that feed much on larvæ, and swallow the hard cases, become yellower, and the red spots increase so as to outnumber the black ones; and these qualities become fixed in the young fishes, and establish a particular variety."

This would seem, in plain English, to describe the existence of a fish in the direct process of change, from the ordinary form of the Trout to the Gillaroo, the feeding on the larvæ of winged insects, in their hard stony cases, being, as it were, a first step toward becoming shell-fish eaters, and the effect being indicated in the gradual change of colour, though the causes have not been as yet sufficiently powerful to produce the induration of the stomach.

In America, likewise, it has been attempted to draw a distinction; and Dr. Dekay, a very accomplished and able ichthyologist, although perhaps—with all deference be it spoken—rather too much of an in-door naturalist, and too much inclined to admit hearsay evidence, has designated a species as the Red-bellied Trout (*Salmo Erythrogaster*); which I confess I do not believe to be even a permanent variety, but merely a brilliant specimen of the common Brook Trout, in its highest season,

taken, probably, from some very bright and sunny water. In this view I am fully sustained by Professor Agassiz, who has made some very curious experiments with regard to the colours of fishes, of the *Salmonidæ* especially; and who has ascertained, beyond a doubt, not only that the Trout of different neighbouring waters are affected by the colour and quality of the water, but that the Trout of *the same river* vary in colour accordingly as they haunt the shady or the sunny side of the stream. For it is a well-known fact, that the *Salmonidæ*, although many of them are migratory at certain seasons, have their own haunts and hunting-grounds to which they steadily adhere, moving but a short distance from one spot, in pursuit of their prey, and returning to it when satisfied.

Thus, in a mountain-brook, you shall find, perhaps, that the pool between an upper and lower fall or rapid is occupied by two fish; one of these will lie at the head, the other at the tail, of the pool, the more powerful fish selecting the spot which he chooses, and neither exchanging places, nor hunting far from his habitual haunts.

In still waters, in like manner, you will find that, day after day, the same large Trout will be seen under this bank, by that large stone, or in the cavity formed by the roots of yon ash or alder; and that he will not stray to any distance from it, but will seek his prey nearly in the same waters, and on the same side of the river, the opposite bank being probably held by a rival fish.

That this will at first be deemed far-fetched and improbable, I think likely enough; but the more we consider it, the more reasonable shall it appear; for when we weigh the great influence

of light in the production of colours, and then think how much the transmission of light through different media, as, for instance, waters of different degrees of density, purity, and colour, affects the light itself, we shall find the theory far less extravagant than it strikes us at a first glance.

And here, I shall quote an anecdote, related in "Salmonia," for the purpose of elucidating an entirely different point, which yet is so much to the purpose, in the present instance, that it is even more valuable in illustration of this, than of that for which it is quoted.

"A manufacturer of carmine," thus runs the story, "who was aware of the superiority of the French colour, went to Lyons for the purpose of improving his process, and bargained with the most celebrated manufacturer in that capital for the acquisition of his secret, for which he was to pay a thousand pounds. He was shown all the processes, and saw a beautiful colour produced, yet he found not the least difference in the French mode of fabrication and that which he had constantly adopted. He appealed to the manufacturer, and insisted that he must have concealed something. The manufacturer assured him that he had not, and invited him to see the process a second time. He minutely examined the water, and the materials, which were the same as his own, and, very much surprised, said, 'I have lost my labour and my money, for the air of England does not permit us to make good carmine.' 'Stay,' says the Frenchman, 'do not deceive yourself; what kind of weather is it now?' 'A bright sunny day,' said the Englishman. 'And such are the days,' said the Frenchman, 'on which I make my colour. Were I to attempt to manufacture it on a dark or

cloudy day, my results would be the same as yours. Let me advise you, my friend, to make your carmine on bright sunny days.' 'I will,' says the Englishman, 'but I fear I shall make very little in London.' "

Now this anecdote may be depended upon; for a person so distinguished as a chemist and natural philosopher as Sir Humphrey Davy would not have related a story in regard to the effect of light, which was contrary to truth, or which he did not directly know to be true.

And if the effect of sunshine is so great on colour, as that the increase or decrease of its brilliancy should cause a totally different result to follow from the combination of precisely the same chemical ingredients, it will readily follow that much more effect will be produced by its excess in one case, or almost total exclusion in another, upon hues so changeful as those which glitter on the scales of a fish.

That in a pure limpid rapid stream, rushing over a bright gravelly bed, through open fields, where no envious boughs intercept the sunlight, and in a dark turbid pond, the waters of which are saturated with the draining of peat-bogs, or with the juices of decomposed vegetable matter, and over-shadowed by thick evergreen umbrage, the light even of the most gorgeous noon will be transmitted in very different degrees, and produce very different effects both of colour, heat, and radiance, any person can judge, who will observe the sunbeams as they fall through a sheet of pure plate-glass, or a thick green bull's-eye; and that the consequences may easily be as they are stated above, he will, I think, be satisfied.

Now, in the first place, analogous to this, and in corroboration

of this view of the subject, I will remark here, that one of the principal external differences between the American and the European Trout is precisely as might be expected under the views taken above. The climate here being far more sunny, the atmosphere drier and more transparent, and the weather more constant and lightsome, we find that the Trout of America is a lighter-coloured, brighter, gayer, and more gorgeous creature than his European kinsman. And, farther yet, we shall find that in the purest and most limpid streams, in the lakes which to the most transparent waters add the sunniest expanse, the brightest and most beautiful Trout are taken; while in the black boggy waters, or in forest-embowered rivers, the colours of the fish are likewise dim and dusky.

This is not, however, merely a matter of theory and analogy, for experiments have been actually tried on this point, and with perfect success. Mr. Agassiz assures me that he has repeatedly known very brilliant and gaily-coloured fish, taken in clear and sunshiny waters, and transferred to neighbouring pools or streams of totally different character, to begin to fade and lose the intensity of their colours, sensibly, within a very few hours, and after a few days or weeks, to be entirely undistinguishable from the native fish of the place.

This accounts, at once, for the facts so often stated, and seemingly so inexplicable, of two lakes communicating with each other by a common channel, and containing two distinct varieties of Trout, one beautiful, and excellent upon the table, the other dark-coloured and ill-tasted, the two varieties never being known to intermingle, or to exchange from one to the other water.

The explanation of this apparent phenomenon is, that the

change produced by passing from the dark and peat-soiled waters of the one lake, to the limpid element of the other, in the fish, is so rapid, that they assimilate themselves almost instantaneously, in outward appearance, to the fish into whose society they have emigrated.

The lakelet, known as Stump-pond, on the northern side of Long Island, which, as its name indicates, is filled with the butts of dead trees, and saturated with vegetable matter, has been for many years famous, or I should rather say infamous, for the ugliness, want of brilliancy, and indifferent quality in a culinary point of view, of its Trout, as compared with those of the bright and transparent mill-ponds and rivulets of the south side. No one, however, has ever thought of erecting them into a species, or of designating them as *Salmo Stumppondicus*, seeing clearly the cause and effect; and lo! now of late years, as the cause is passing away with the process of time, the effect is also disappearing; as the vegetable matter is decaying, being absorbed, and swept away, and as the purifying influences of the springs are gaining upon the corrupt and stagnant qualities of the pond, the fishes are likewise becoming brighter and better. In the course of a few more years, it is probable that they will be scarcely distinguishable from the finely-formed and finely-coloured fish of Snedecor's or Carman's streams, at Islip and Fireplace.

Doubtless other causes besides the influence of light have their effect both upon the appearance and the flavour of the Trout; we have seen that their colour is affected by the shell-fish, or even the larvæ of flies, on which they feed; we have also seen that they increase in weight, size, and fatness, according

as they are nourished with worms, with small fry, or with water flies; and no one in his senses can doubt, I imagine, that if these fish which have obtained scarlet spots, and become golden-finned and golden-bellied by feeding on shell-fish, or crustaceous-cased insects, were confined upon a regimen of dew-worms or May-flies, they would gradually relapse into their original colouring.

Nor can it be supposed, I think, judging from analogy, but that the Gillaroo Trout, kept permanently in situations where it could never find either shell-fish, or any hard edible substances, would gradually lose the distinctive hardness of its stomach, as well as its characteristic colouring. The probability is, that the young fry of a finger's length, spoken of by Sir Humphrey, would lose the distinction individually; and I do not at all conceive it likely that the characteristic would survive through two generations from the largest adult.

While I am writing on this point, I will cite a fact, though it belongs with greater propriety to the history of another fish, the Greatest Lake Trout (*Salmo Amethystus*), when describing which, it will be noticed more fully. This is simply that in the same lakes, Huron and Superior, this same fish exists in three different states of colour, so totally dissimilar, that it is supposed by the French inhabitants of the shores to be three distinct fishes, and is known by three distinct names, according to the situations in which it is found, and by which its colouring is evidently affected.

Drawings of the fish in two of these stages are now lying before me, and will be presented to my readers under the proper head; here, it will be sufficient to state that, but for the shape

of the head and gill-covers, the form of the fins and the number of the fin-rays, things not examined by the superficial observer, they would pass for different fish. These three varieties are known as the *Truite de Grève, Truite des Battures,* and *Truite du Large;* or, Trout of the muddy bottom, Trout of the rocky shores, and Trout of the open waters; the first being a dull mud-coloured fish, the second bright and handsomely mottled, and the last bluish and silvery, and resembling more a clean-run Salmon than a Lake Trout.

This is so fairly a case in point, that I cannot resist quoting it here, as it is perfectly evident that there is no real distinction whatever; and if this be so of one variety or species, there is no reason for doubting that like causes will produce like effects, in the congenerous species. Again, it is not only possible, but in the highest degree probable, that the different chemical substances which are held in solution by the waters of various streams and lakes may not be without their influence on the the colouring of their inhabitants. I think I have myself observed, both on this continent and in Europe, that the Trout in streams flowing from lime-stone formations are more lustrous, and more strongly spotted than those of duller and less lively waters.

That the fish of streams rushing rapidly over pebbly beds are superior in all respects, both of appearance and quality, to those of ponds or semi-stagnant brooks, is confessedly notorious; but this may arise not so much from any particular components of the waters themselves, as from the fact that rapidly moving and falling water is more highly aërated, the atmosphere being more freely intermingled with it, and there-

fore more conducive to the health and condition of all that inhabit it.

Independently of Dekay's *Salmo Erythrogaster*, I find mention made in the "American Angler's Guide," of *the Silver Trout, the Common Trout, the Common Trout of Massachusetts, the Black Trout, the Sea Trout*, and *the Hucho Trout*, although to none of these, except the last, is any scientific name attached.

I beg, however, to assure my readers, that there are no such distinctions existing in nature. The Silver Trout, which is stated to be found in almost all of our clear, swift-running northern streams, and to weigh from one to fifteen pounds, is in no respect a different fish from the Common Trout of Long Island; nor does that fish differ in any, the smallest, particular from the Trout of Massachusetts, or of any other place in the United States, where the Trout exists at all.

I wish greatly, that the author of the "American Angler's Guide" had given some authority for his statement, that this fish is taken in this country up to fifteen pounds, or even up to half that weight. I have myself some slight suspicion that such is the case rarely, in the northern lakes—I do not mean the great lakes—of New York and New England; and that it is there mistaken for some new species, or a variety of Lake Trout, from which it differs far more, in all respects, than it does from the true Salmon.

I have, however, never been able to gain any authentic information of any true Brook Trout having ever been taken in Canada, or in the United States, above the weight of six pounds; and that size is of so rare occurrence, that when one

is taken, it is regarded as a monster, and is heralded from one end of the country to the other, through the public press. I have myself seen a Trout, taken in the winter through the ice, in Orange County, New York, which lacked but a few ounces of six pounds. I know several instances, not exceeding half-a-dozen, of fish varying from four to five pounds, taken, some on Long Island, some in the interior, within twelve or thirteen years, but I have never heard it asserted that a fish of larger size has been taken in America.

There is, I am aware, a tale that many years since a Trout of eleven pounds was taken at Fireplace; and a rough sketch of the fish is still to be seen on the wall of the tavern bar-room. I know, however, that this fish was considered at the time, by all the true sportsmen who saw it, to be a Salmon, and the sketch is said to bear out that opinion, though I do not myself understand how a mere outline, not filled up, can convey any very distinct idea of the species intended.

Suffice it, that it is not only not on record that any Trout of seven pounds or upward has been captured on this continent, but that old fishermen will assert positively, that they never grow to be above five pounds in weight; and very coolly and civilly imply to you that you are speaking falsely, when you tell them that Trout from ten to twenty pounds are no great rarities in England, and that they are taken even of a much greater weight. The fact, on this point, is, that Trout of ten or even fifteen pounds—I mean the common speckled Trout (*Salmo Fario*), analogous to our Brook Trout—are more common in some of the large rivers of England, and large lakes of Ireland, than fish of four pounds are here. There probably rarely passes

a season in which ten or a dozen of these large fish, exceeding ten pounds' weight, are not taken in the Thames. I do not think that here, on an average, one four-pound fish is killed annually; and their rarity is abundantly proved by the fact that their capture is always recorded.

The Bashe's Kill, in Sullivan County, to which the Silver Trout is assigned, is a pretty Trout stream, but in nowise superior to a thousand others throughout the country; and, like all mountainous streams, is far more celebrated for the number than for the size of its fish.

In both respects, it is surpassed by many of the Pennsylvanian streams of the same neighbourhood, falling into the Delaware from the westward; and in the size and excellence of its Trout, it cannot sustain a moment's comparison with the fish of Long Island streams on the south side. Its fish, it is needless to add, are in nowise distinct.

The Trout of Massachusetts are identical with the Common Trout of New York; the figure at the head of this article is from a specimen taken at Massachusetts. I have caught Brook Trout myself from Maine to Pennsylvania, and can safely pronounce on their identity. The *Black Trout* is merely an accidental variety; the colours, taste, and habits of which are affected by the peaty waters, and stagnant flow of the lazy streams in which it is found, and from which it obtains a corresponding dinginess of hue, muddiness of flavour, and laziness of character.

With regard to the *Sea Trout*, as it is here called, I shall quote a few paragraphs from the pages of "Smith's Fishes of Massachusetts," although I cannot say that I esteem it a work

on which much reliance can be placed, as the author appears, from some of his statements, to be a writer of more rashness than discrimination, and more ready than qualified to give his opinion decidedly, and without appeal.

These qualities are rendered sufficiently apparent by his indulging in a violent tirade against Dr. Mitchil, of New York, whom he accuses of vanity and presumption, in affixing his own name to the Striped Bass, which he, Smith, asserts to be "*a common table fish, known from time immemorial all over Europe.*"

It is I presume, at this day, entirely unnecessary to state that Dr. Mitchil was perfectly right as to the distinct character of the American fish, and its being utterly unknown, and non-existent in Europe; and Smith is wrong in every possible particular: the fish to which he refers it, the Sea Bass of Europe (*Labrax Lupus* of Cuvier, *Perca Labrax* of Linnæus), being altogether a different fish, though of the same family, perfectly distinct both in habits and appearance.

Of the Sea Trout, Smith says:—

"They are found, as may be inferred from the name, in the salt and brackish waters of tide rivers and inland bays, in various parts of this and the adjoining States. When taken from the salt-water early in spring, they are in high perfection, and nothing can exceed their piscatory symmetry. The general appearance of the skin is of silvery brightness, the back being of a greenish and mackerel complexion; the spots of a vermilion colour, mixed with others of faint yellow, and sometimes slightly tinged with purple, extend the whole length on either side of the lateral line; the fins are light in colour and firm in texture, and, together with the tail, are rather shorter and

more rounded than the Common Trout. They have a firm compactness of form from head to tail, which accounts for the superior sprightliness of their movement; the head and mouth are very small, and the latter never black inside, like the common or fresh-water Trout; the flesh is even redder, or rather, we would say, more pink-coloured than the Salmon, to which, by many, they are preferred as a delicacy, having, like the Salmon, much of what is called curd, or fat between the flakes.

"A fish of a pound weight measures about eleven inches in length. Their average size is considerably larger than the fresh-water, or Brook Trout—having been taken in the waters to which we refer—Waquoit Bay, upon Cape Cod, and Fireplace, Long Island—of nearly five pounds' weight; such instances, however, are rare, three pounds being considered a very large fish. We do not remember ever seeing a poor fish of this kind taken. They are invariably in good condition, let the size be what it may," &c. &c.

I have quoted this passage merely for the purpose of warning my readers, in a few words, that there is no such thing; and that the whole of the above refers merely to the Brook Trout.

All the varieties and species of *Salmonidæ*, with the exception of some of the large lacustrine species, are migratory whenever it is in their power to be so; and run down to the sea, annually, for the purpose of recruiting themselves after spawning, whence they return, like the Salmon and Salmon Trout, in excellent condition, perfect symmetry, and in the highest state of external beauty.

The non-migratory habit of the large lacustrine species does not depend, in any degree, on their position or situation above impassable cataracts, or in waters without outlets, although they are frequently found under such circumstances, for they do not run down to the sea, even when they have it in their power to do so; as, for instance, in Lake Ontario, where they are found abundantly; nor, on the other hand, do they proceed far up the rivers, for the purpose of spawning, being content to deposit their ova on the gravel beds of shoal water, at the margins of their lakes, or at the mouths of the brooks which discharge into them.

Of the migratory species the Brook Trout is one; and when it is in his power, he invariably descends to the sea, and returns to perpetuate his species by depositing his spawn in the clearest, coolest, and most limpid waters which he can find. There can be, I think, little doubt that, like the Salmon, he returns to the streams in which he has been bred.

There are, doubtless, hundreds of mountain brooks throughout the country, divided by impracticable falls, natural or artificial, from the sea; and, although these teem with hordes of Brook Trout, they never attain, in them, to any size; the mature adults being scarcely larger than the young fry, while they are still marked with the transverse bandings of the Parr. The flesh of this little fish never attains the rich cherry-coloured tint of the Trout, in full season, but is of a pale yellowish flesh-colour, and has neither the richness nor the flavour of the sea-run variety. That these swarms do not visit the sea, is not because they lack the will, but because they have not the power; and, it is possible that the habit of running seaward

the authority of Smith, as a fish of New England, stands in the same category with the last-mentioned.

There is no such fish on the continent of America; and, indeed, even on the European continent, where alone it is found, its limits are narrower, and its geographical range smaller, than that of any known fish. It is, in fact, found only in tributaries of the Danube, more especially in the Traun, the Saave, the Draave, and the Laybach rivers. Some writers have supposed him to be purely a fresh-water fish; but it is believed by Davy that, in his largest state, he is an inhabitant of the Black Sea. He is said to spawn in the Muir between March and May, and in the Danube in June.

He is the fiercest and most predatory of all the *Salmonidæ*, and it is useless to attempt the capture of large ones with the fly. Spinning tackle, the bleak, the minnow, and small trout, or parr, are the only modes, and the only bait which he cares to take.

In shape, he resembles an ill-fed Trout, being the longest and slenderest of all the *Salmonidæ*, the ratio of his length to his girth being as eighteen to eight, or in well-fed fish, twenty to nine. He has a silvery belly, and *dark spots only* on the back and sides, which, in itself, shows sufficiently that he is not the fish described by Smith under this name.

Smith's fish is described "as resembling much the Sea Trout; but being found, on a careful examination, to be more slender, and to have a greater number of *red* spots. The back is dusky; the ventral fin has a yellowish tinge; all the others are of a palish purple; the tail is forked, and the fish measures sometimes four feet through—ordinarily they are only about two,

and are caught by the hook. This Trout certainly exists in the large rivers and ponds in the interior, but deteriorate in size. They are brought from New Hampshire in the winter, frozen, for the markets, and from the northern parts of Maine, where specimens have been taken as large as any produced in the great rivers of Europe."

This passage I quote from the "American Angler's Guide," and I do so, to declare that this fish is, in the first instance, not the Hucho; and, secondly, to point out that no such fish has ever been authentically produced at all. A Hucho of the Laybach, of two feet in length, by eleven inches' girth, and three inches' thickness, was found to weigh four pounds two and a half ounces. Now, fishes increase in weight in the ratio of their breadth and depth, not of their length, a Trout of thirty-one inches weighing seventeen pounds. Whether any Trout or Salmon has ever been taken, of full four feet in length, I greatly doubt. If so, its weight must be enormous: the largest Salmon ever known, the eighty-three pounder, which came into the possession of Mr. Groves, the London fishmonger, in 1821, is described as having been a short fish for the weight, and, I am convinced, would not have measured four feet.

Now, it remains to inquire what is this fish, which Mr. Smith designates as the Hucho; and is there any such fish in existence, elsewhere than in that gentleman's imagination?

Now, I fear, the answers to these questions must be in the negative, since, most assuredly, there is no scarlet-spotted Trout on record, at all approaching to the size described by Mr. Smith, which we must reckon at the rate of from seventy to one hundred pounds' weight.

The Mackinaw Salmon (*Salmo Amethystus*), which does grow to that prodigious size, and which answers to many of the particulars specified, is never *scarlet-spotted*, nor does the *Salmo Confinis* of Dr. Dekay ever show a red spot.

One or both these fish do exist in the lakes of Maine and New Hampshire, from Temiscouata to Winnepisiogee, and it may be that this is a mis-description of one of these. If it be not, it is either a new and nondescript fish, of the kind mentioned as killed by the President of the Piseco Club, "with red flesh, weighing twenty-four pounds," or it is a very large specimen of the Brook Trout, and, moreover, wonderfully exaggerated in dimensions.

It is a remarkable peculiarity of the American Trout, that it is never found—except when, as a very rare exception, one is taken in drawing the seau—in any large rivers. I have never heard a solitary instance of a fish being taken either with the bait or the fly, or even with the spinning tackle, in any large stream, unless quite at its head-waters, where it is *not* large. All the Trout which are taken, are taken in what are here called creeks, and what would, in Europe, be described as large brooks, or small rivers of the sixth or seventh class. In these the run of fish greatly exceeds the dimensions of the little inhabitants of the mountain brooks. This, in addition to other facts, at the knowledge of which we have arrived through the experiments recorded heretofore, as made in England, with regard to the growth of fishes, lead us irresistibly to the conclusion that the use of large expanses of suitable water is necessary to the Trout, in order to their arriving at any great magnitude.

It is, therefore, quite within the range of possibility, that in the large pure inland lakes, supplied by the limpid springs of the mountains, the Brook Trout of America may attain a growth analogous to that of the well-fed and full-grown Trout of the Thames, the Stour, and the Irish lakes; a growth which the smallness of the streams which they do frequent, and their inexplicable avoidance of the large and navigable rivers, prevent them from acquiring elsewhere.

I cannot say that I shall be at all surprised should it turn out, on investigation, that the Brook Trout (*Salmo Fontinalis*), is indeed occasionally taken up to the weight of twenty or twenty-five pounds, especially in the waters of Hamilton County; and is now confounded, on account of its size, with the great worthless Lake Trout—worthless, whether as a fish of game or a table fish—of the same waters.

The Brook Trout proper of America is one of the most beautiful creatures in form, colour, and motion, that can be imagined.

He is slenderly and gracefully formed, though rather deeper in proportion to his length than the Salmon, and far more so than the Lake Trout.

In a well-grown and well-fed fish; the length of the head to the whole body is about as one to five; and the length of the whole body to the breadth, at the origin of the first dorsal fin, as four and a half to one. A line drawn from the front teeth to the posterior curve of the gill-cover, which is nearly semicircular, is nearly parallel to the lateral line, and will divide the body into two nearly equal parts, the convexity of the back and belly being also nearly equal. The centre of the dorsal fin is as

nearly as possible in the centre of the length of the body; and the second dorsal fin is equidistant from the posterior extremity of the dorsal and that of the caudal fin. The origin of the ventral fin is vertically under the origin of the dorsal; and the origin of the anal equidistant from the termination of the ventral and the origin of the caudal fin. The pectoral fin is about two-thirds the length of the head.

The pectoral fin has eleven rays; the first dorsal eleven; the ventral eight; the anal fifteen; the caudal nineteen. The second dorsal, rayless and adipose.

The head is smooth; the body covered with small and delicate scales. Teeth on the vomer, the palatine bones, and all the maxillary bones. The head and upper part of the back are beautifully mottled, like tortoise-shell, with brownish green and yellow spots; the gill-covers silvery, with yellowish and pink glazings; the sides, about the lateral line, lustrous metallic bluish-grey, with large yellow spots more brilliant than on the back. A double row of vivid vermilion specks, irregular in number, along the lateral line, above and below it. The sides and upper portion of the belly glazed with bright carmine; the belly silvery white; the pectoral fins reddish-yellow, with a dusky anterior margin; the ventral fins the same, with the margin blacker and more definite; the anal fin red, with a broad white anterior margin, and a black lunated streak between the white and red; the caudal fin purplish-brown; the first dorsal golden-yellow, barred and spotted irregularly with jet-black; the second dorsal similar to the back.

Such, briefly, are the characteristics and general appearance of this beautiful and interesting fish, which, in every part of the

world, where angling is resorted to as a sport, and not merely as a mode of obtaining subsistence, is the great object of the scientific fisherman's pursuit.

There is no sportsman, who is actuated by the true animus of the pursuit, who would not prefer basketing a few brace of good Trout, to taking a cart-load of the coarser and less game denizens of the waters; nor, whether we consider his wariness, his timidity, his extreme cunning, the impossibility of taking him in fine and much-fished waters, except with the slenderest and most delicate tackle; his boldness and vigour after being hooked, or his excellence on the table, shall we wonder at the judgment, much less dispute it, which, next to the Salmon only, rates him the first of fresh-water fishes. The pursuit of him leads us into the loveliest scenery of the land; the season at which we fish for him is the most delicious, those sweetest months of spring—when they are not, as at present, the coldest and most odious of the year—the very name and mention of which is redolent of the breath of flowers, the violet, the cowslip, and the celandine, which plunge us into a paradise founded upon the rural imaginings of the most exquisite of England's rural bards, until we are recalled from our elysium by a piercing gale from the north-east, and perhaps a pelting hailstorm, bidding us crush our wandering fancies, and teaching us that spring-time is one of those pleasant things which occurs twice perhaps in a lifetime in the United States of America.

The habits of the Trout have been already discussed so fully in the earlier part of this article, as well as the nature of his food, that I shall defer further mention of these topics, until I

come, in the second part of this volume, to the taking of him with the natural or artificial bait, which is most intimately connected with the consideration of his prey and his haunts, so that in that place these will be most suitably discussed.

THE GREATEST LAKE TROUT.

MACKINAW SALMON.—NAMAYCUSH.—SALMON TROUT.

Salmo Amethystus—Mitchill, Dekay. *Salmo Namaycush* Pennant, Richardson.

Variety:—Truite de Grève.

This noble and gigantic species, which equals, or even exceeds, in size, the true Salmon (*Salmo Salar*), and is by far the largest of all the lacustrine or non-migratory *Salmonidæ*, is found in all the great lakes to the northward and westward of Lake Erie, to the fur countries and the arctic region. It is not found in any tidal rivers, and never visits the sea. The falls of Niagara present an insuperable obstacle to its descent into Lake Ontario; but whether it exists in any of the smaller lakes of New York, or the eastern waters of New England, does not as yet appear to be fully ascertained. It has been taken by the companions of Dr. Richardson and Sir John Franklin, in Winter Lake, lat. 64½° N.; but I cannot learn that it has been discovered in any of the waters which discharge themselves southward by the Mississippi or the Missouri. I doubt not at all that it exists in the waters of the Great Basin and the Columbia, and that it is one of the fish mentioned by Colonel Fremont, as taken

in them, during his explorations. The name of Mackinaw Salmon, by which it is commonly known, is, therefore, a misnomer, since it is no more peculiar to the Straits of Michilimackinac than to any other locality between the Falls of Niagara and the Arctic Ocean. The term Namaycush, which Pennant adopted, and Dr. Richardson has retained, both as its English name and its scientific distinction, is no more than its denomination by the Cree Indians, who term it Nummēcoos, and I confess I think it in both respects preferable to any other; for Dr. Mitchil's scientific name *Amethystus*, which he gave it in consequence of a faint purplish tinge perceptible on the teeth, gums, and roof of the mouth, is founded on a peculiarity so slight—I speak on the authority of Professor Agassiz—as in many specimens to be scarcely distinguishable; while it has no name in the English language defining it from the Siskawitz, inhabiting the same waters, or from the common Lake Trout (*Salmo Confinis*), of the New York and New England lakes.

It is a remarkable fact, that at least one-half of our inland or fresh-water fishes have no correct English names, no names at all in fact, but such arbitrary and erroneous terms as were applied to them ignorantly, by the first English settlers in the districts in which they are found, and have been adhered to since for the lack not of *better*, but of *any* real names. Thus the peculiar fish of Lake Otsego, though fully ascertained to be, and scientifically distinguished as, one of the family *Salmonidæ*, and defined as *Coregonus Otsego*, has, to this day, no other appellation in the vernacular than the absurd misnomer of Otsego *Bass*, to which species it has no relation whatsoever. The same is the case with the fish called "*Trout*" by the inhabitants of

Carolina and the neighbouring States, which is mentioned as the "White Salmon," by Smith, in his history of Virginia; and which is said to abound in the rivers of Pennsylvania. This is, I doubt not, the fish alluded to by a recent writer in the "Spirit of the Times," as the Susquehana Salmon, unless perchance another nameless fish, the *Perca Lucioperca*, is intended. The southern Trout is of the Perch family—nothing more remote from Trout—though in form it has some resemblance to the *Salmonidæ*. It is the *Grystes Salmoïdes* of Cuvier, the *Labre Salmoïde* of Lacépède, both terms indicating its family as of the Perch or Bass, and its similarity to the Salmons; but it has no English name at all, unless we adopt the vulgarism of calling it a Trout, which is no less absurd than it would be to call a Pickerel, Salmon.

These prevalent misnomers, and this total absence of real and rational names, are of great disadvantage, creating excessive confusion, and puzzling all, except the scientific naturalist. It is much to be regretted, that the Indian terms have not always been retained; for, when interpreted, they are almost invariably found to be truly distinctive; and it is greatly to be desired that, on the discovery of new genera, or varieties, this system of nomenclature may be adopted, as it has been by Professor Agassiz, with regard to the Siskawitz, a new lacustrine Trout, discovered by him, during the past summer, in the great waters of Huron and Superior.

With regard to those misnamed long ago, the misnomers of which have become familiar, and as it were stereotyped by the lapse of time, it is difficult to say what is to be done, or how the evil is to be remedied; and it is to be feared that the *Coregonus*

of Otsego will remain the Otsego Bass for ever; since, although nothing is easier than to explain, and even to prove, that the fish is in no respect a Bass, when he who has been accustomed so to call it, but who is open to conviction, inquires, If I must not call him Bass, what is his name?—there is no answer to the foregoing, but that he is a *Coregonus* of the Salmon family.

To return, however, to the Greatest Lake Trout, Mackinaw Salmon, or Namaycush—it is also called, in common with all the other large Lake Trout, Salmon Trout; but this is too absurd even to be admitted as a provincial synonyme, since the Salmon Trout is a Sea Trout, and is, moreover, found on the eastern shores of this continent. This is probably the largest of the Salmon family in the known world; hence, I have ventured, on my own authority, to designate him as the Greatest Lake Trout, in order to distinguish him, not only from the Siskawitz, and the *Salmo Confinis* of Dekay, but also from the Common Trout (*Salmo Fontinalis*), when taken of large size in the small inland lakes.

The average weight of this monstrous fish in Lake Huron is stated by the fishermen to be seventeen pounds, but they are constantly taken of forty pounds weight, and not at all unfrequently of sixty or seventy.

It is stated by Dr. Mitchil, that at Michilimackinac they have been known to attain the enormous weight of one hundred and twenty pounds, with which the dimensions of the same fish as described by La Hontan, in his *Mém. de l'Amérique*, would seem to agree—"*Les plus grosses Truites*," says he, "*des lacs ont cinq pieds et demi de longueur et un pied de diamètre*"—but at the pre-

sent day, specimens of this gigantic magnitude are never seen, and seventy pounds may be taken as the limit of their ordinary growth. Even this, however, is a size to which the Sea Salmon has scarcely been known to attain.

It is a bold, powerful, and tyrannical fish, with which no other inhabiting the same waters can compete. The Grey Sucking Carp (*Catastomus Hudsonius*), the Methy, a species of fresh-water Ling (*Lota Maculosa*), and the Herring-salmon (*Coregonus Artedi*), form the favourite food of this voracious fish, the stomach of which is constantly crammed with them almost to repletion; but he will bite ravenously and fiercely at almost anything, from a small fish, or a piece of pork, to a red rag or a bit of bright tin, made to play rapidly through the water.

In form, he considerably resembles the Common Salmon, though he is perhaps rather deeper in proportion to his length. His head is neat, small, and well-formed, with rather a peculiar depression above the eye, and the snout sharply curved and beak-like. The head forms nearly a fourth part of the whole length of the fish; the skull is more bony than that of the Common Salmon, the snout not cartilaginous, but formed of solid bone; the jaws are very strong, the upper overlapping, by about half an inch, the lower, which is strongly articulated to the *pre-operculum* and to the *jugal* bone. The eye is midway between the snout and the nape, and twice as far from the hinder edge of the gill-cover as from the tip of the snout.

Of the gill-covers, the *pre-operculum* is curved or vertical, or nearly so; the *sub-operculum* is deeper than in the other Trouts, and is jointed at its inner angle to the *operculum* and *pre-operculum*, by a slender process concealed by these bones. Its edge

forms fully one half of the border of the free gill-cover, and is finely grooved. The gill rays are twelve in number.

The dental system of the Mackinaw Salmon is very complete, and more formidable than in any other member of the family. The intermaxillaries and labials, as well as the palatine bones, lower jaws, and tongue, are armed with very sharp and strong conical curved teeth; those on the vomer consisting of a circular cluster on the knot of that bone, and of a double row extending at least half an inch backward.

The dorsal fin is situated in the middle of the fish, and contains fourteen rays, the eighth ray being exactly central between the snout and the tip of the central caudal fin-ray. The second, adipose, dorsal fin, is small and obtusely formed. The caudal fin has nineteen, the ventrals, each nine, the anal eleven, and the pectorals, each fourteen rays. The origin of the central fins is slightly posterior to the centre of the fish.

Such are the principal structural distinctions of this noble fish, and I have entered into these rather at length, since by them only can he be distinguished from his lake congeners. I have already observed the great differences existing in point of colour and markings between fish of the same species found in different waters, throughout this family, and endeavoured to show the impropriety of founding specific distinctions, or even permanent varieties, by reference to these alone, without reference to structure. In the *Salmo Fontinalis*, common Brook Trout, this is easy to be noticed, but in none of the *Salmonidæ* with which I am acquainted, are the differences of colour and marking so broad and distinct, as in different individuals of this species. I have before me, as I write, three coloured representations of

this same fish, two water-colour sketches, by Mr. Cabot, of Boston, and one, a coloured lithograph, in Dr. Richardson's "Fauna Boreali-Americana;" and these three, I am certain would be pronounced by nine persons out of ten, not accustomed to observe structural differences, three different fish. Indeed, I am informed by Professor Agassiz, that, by the French residents on Lakes Huron and Superior, they are actually believed to be three distinct fish, and are known by three different names, from the localities in which they are found, viz.:—Trout of the rocky shallows (*Truite des Battures*), Trout of the muddy shoals (*Truite de Grève*), and Trout of the deep open waters (*Truite du Large*). The first of these fish is represented in the large plate, and the second in the cut, the third is thus described in Dr. Richardson's work named above:—"The head, back and sides, have a dark greenish grey colour, which, when examined closely, is resolved into small roundish yellowish grey spots, on a bluish grey ground, which covers less space than the spots; the latter are most evident on the sides, each of them including three or four scales. The uncovered portion of each scale is roundish, and its convex centre, having a greyish hue and silvery lustre, is surrounded by a dark border of minute spots, which are deficient or less numerous on the yellowish grey spots, and also on the bluish white belly. The dorsal and caudal fins have the greenish grey tint of the back, and the ventrals and anals are muddy orange; this colour also partially tinging the pectorals. The irides are bright honey yellow with blue clouds."

I will merely add to this, that in the coloured lithograph, which is beautifully executed, the fish has a bright, clean,

silvery appearance, with a prevalence of bluish grey hue, and a silvery belly, precisely in accordance with a description given to me by Professor Agassiz, of the *Truite du Large*, for in this condition I have never myself seen the fish.

In the drawings by Cabot, from which the wood-cuts to this paper are taken, and the correctness of which I had an opportunity of verifying, by personal inspection, during a recent visit to the upper lakes, the *Truite des Battures* (large plate) is of a dark bluish green on the back, fading into a greenish brown about the lateral line, thence into a greenish yellow on the sides, and into bluish silver on the belly, the whole largely marked with distinct irregularly-shaped spots, light green on the dark back, yellowish on the brown green of the sides, and silver on the bluish belly, becoming larger as they descend from the back, and at last melting into the brightness of the abdomen. The dorsal and caudal fins of the same colour as the back, with irregular yellowish green spots, the latter faintly margined with dull red; the pectorals bluish grey, margined with the same colour, and the ventrals and anals broadly margined with dusky vermilion. The third variety, the *Truite de Grève*, is generally of a muddy greenish brown, darker and greener on the back, browner on the sides, and yellowish grey on the belly. The spots in this variety are much smaller than in that last described, and far less definite both in shape and colour, so that the fish might be said to be mottled or clouded, rather than spotted. The fins are all of the same dull, dingy, olivaceous colour, similarly clouded, with the faintest possible indication of a ruddy margin on the pectorals, ventrals, and anals, but no tinge of that colour on the caudal fin. Both

these varieties I have seen and compared within the last month, recently taken on Lake Erie, and I am informed that the colour and flavour of the fish is affected, as might be expected, by the same circumstances which produce the difference of external colouring, the brighter fish having the redder flesh and the higher and more delicate flavour.

In the deep cold waters of Lake Huron, all the fish are infinitely superior, both in firmness and flavour, to those of the comparatively shallow and muddy waters of Lake Erie, so much so, that those who have been accustomed all their lives to the White-Fish (*Coregonus Albus*), of the lower lake, speak of that of Lake Huron as entirely a different fish as regards its epicurean qualities.

"The flesh of the Namaycush," says Dr. Richardson, "is reddish or orange-coloured, being paler when out of season. When in good condition, it yields much oil, and is very palling to the appetite if simply boiled, but roasting renders it a very pleasant article of diet. The Canadian voyageurs are fond of eating it in a frozen state, after scorching it for a second or two over a quick fire, until the scales can be easily detached, but not continuing the application of the heat long enough to thaw the interior. The stomach, when boiled, is a favourite morsel with the same people."

Although I have seen this fish at almost every season of the year, the flesh of none has exceeded what I should call a dull, buffish flesh-colour, not approaching to what, on the most liberal construction, could be termed red or orange colour. It is in my opinion a coarse, bad fish on the table, at once rank and vapid, if such a combination can be imagined, yet it is

decidedly the best of the large lacustrine Trouts, none of which in either hemisphere are either delicate or high-flavoured. I doubt not, however, that when fresh out of the water, in the cold deep lakes of Huron and Superior, crimped and broiled or roasted, it is far better than could be supposed by one who has eaten it only after being many hours out of its native element.

In no respect, however, must we regard the opinions of sportsmen, discoverers, and explorers of new regions, more *cum grano*, than in their appreciation of the qualities of fish, flesh, or fowl in an epicurean point of view. They are apt to be very hungry, in the first place, when they eat, and who does not know the effect of the Spartan sauce or the palatableness of the plainest viands? their tastes are moreover simplified by the absence of sauces and stimulants of any kind; and, in a word, things which to men accustomed to the cooking of cities are tasteless and vapid, are by them naturally esteemed delicate and savoury.

The habits of the Mackinaw Salmon are similar to those of most of the non-migratory Lake Trout; they affect and prefer the deep waters at most seasons of the year, and lie at a great depth beneath the surface. In the spring of the year, however, they approach the shores, and are found in the shallow waters, whither, it is supposed, they pursue the various kinds of fish on which they prey, which resort thither in search of larvæ of various insects. They do not enter the rivers to spawn, but approach the shores for that purpose in autumn, depositing their ova on the gravelly shoals, and then retiring again into the depths. In Lake Huron they begin to spawn about the 10th of October, and return to the centre of the

lake within three months from the commencement of the movement. The young fry of this fish has been examined by Professor Agassiz, and found to possess the same lateral bands or markings which were formerly believed to be peculiar to the Parr alone, but which are, in all probability, common to every species of the family of *Salmonidæ*.

During its stay, at the spawning season, in the shallow channels between the innumerable islands, the Namaycush is speared by torchlight, in great quantities, by the Indians—a cruel and wasteful devastation, which, though it cannot be wondered at in the untutored savage, cannot be reprehended too severely when practised, as it is universally, by the civilised white man, for purposes of reckless sport or illicit and dishonourable gain. In the fur countries they are sometimes taken in the autumn with nets; but the season when it is captured in the greatest abundance is in the months of March and April, during which it is taken by thousands on cod-hooks, baited with small fish set in holes cut through the ice, in eight or nine fathoms water. It will not be amiss here to state, that when the ice is formed of snow partially melted and recongealed, so as to be opaque, presenting an appearance like that of ground glass, neither this nor any other of the Trout family will take the bait.

During the mid-summer and mid-winter months the Mackinaw Salmon is rarely seen or captured, as during those seasons it lies in the deepest waters in the centre of the great lakes, so that it can be fished for only with a drop-line and heavy plummet at an extraordinary depth, in a manner similar to that practised in deep-sea fishing.

Of the more scientific and exciting methods of angling for

this fine fish, as trolling, spinning, and the like, I shall treat in due order in another portion of this volume; what I have said here being rather in illustration of its habits, than of the correct *modus operandi*.

Salmo Amethystus.—Mitchill.

THE SISKAWITZ.

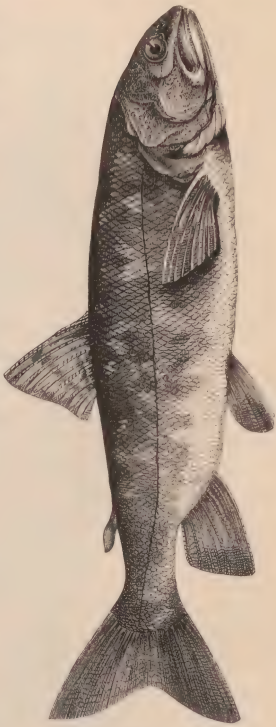
NORTHERN LAKE TROUT.

Salmo Siskawitz—Agassiz.

This fine fish, which is second only in size to that last described, was discovered so recently as last summer, during a trip to the upper lakes for scientific purposes by Professor Agassiz, to whose courtesy and kindness I owe the power of including it in this work, as it has not up to this time been described or figured in any book of natural history. A journal of that tour is at this moment passing through the University press at Harvard, which will comprise a full account of this, and several other previously nondescript fishes, together with accurate and beautiful lithographic illustrations by Sonrel; and to this, for fuller information, and especially for accounts of several species which do not come within the limits of this work, I refer my readers, certain that they will derive both pleasure and profit from the perusal.

The Siskawitz, in its colouring and general appearance, as regarded by an uninstructed eye, bears a very considerable resemblance to the Mackinaw Salmon, or Namaycush, particularly to that accidental variety of it which I have described above as the *Truite de Grève;* and is found in the same waters with it, most abundantly in Lake Superior and Lake Huron, but more or less commonly in all the lakes above the Falls of Niagara. In Ontario, and, as it is believed, in the smaller

inland waters of New York and the Eastern States, it is unknown.



Salmo Siskawitz—Agassiz.

The head, back, and sides of the Siskawitz, above the lateral line, are of dingy brownish olive, with a greener gloss on the upper parts, irregularly blotched and clouded, rather than spotted, with lighter circular or oval patches of the same colour. Below the lateral line the colour is paler and more yellow, with clusters of the same spots fading into a dull dead white, which is the prevailing hue of the belly, with a very slight silvery gloss on some of the scales.

The dorsal and caudal fins are of the same greenish brown with the back, and like it are irregularly patched with lighter spots. The pectoral, ventral, and anal fins are paler, but with the same

markings, and with a very faint indication of dusky red on the margins.

Altogether, the Siskawitz is a greener coloured and less lustrous fish than the Namaycush, and far less distinctly spotted; still there is so much similarity, that by a person not accustomed to look for nicer and more permanent structural distinctions, the two species might be very readily confounded.

In form the Siskawitz is rather shorter and stouter than the Mackinaw fish, and does not taper nearly so much at either extremity. The head particularly, which in the other is very small, neatly shaped, and depressed towards the snout, is short, thick, and very obtusely rounded, giving it a coarse and clumsy profile, and distinguishing it decidedly from the kindred species. On the shoulders it is moderately broad, with the sides somewhat compressed. The length of the head is about one-fourth of the whole length of the fish, from the snout to the tips of the caudal. The skull is strong and bony, with powerful lower jaws. The porous lines and foramina of the bones, seen on the heads of several of the other Trouts, are very evident, and distinctly marked in this, as are the radiating processes on the *operculum* and *pre-operculum*.

The *pre-operculum* is considerably rounded, and almost vertical; the posterior free margin of the gill-covers is nearly semicircular, much less acute posteriorly than in the Namaycush.

It has a very complete and formidable dental system, all the maxillary and palatine bones, as well as the lower jaws and either side of the tongue, being armed with strong, sharp, curved teeth, and the vomer provided with a double line extending along the whole length backward. The dorsal fin is

situated nearly midway the whole length of the body; the posterior dorsal is thicker and more clumsily shaped than in the preceding species. The caudal fin is deeply forked.

The number of rays in the several fins I am, I regret to say, unable to supply at present.

Neither in colouring nor in form, therefore, does the Siskawitz equal the Mackinaw Salmon or Namayeush; it is in all respects a clumsier and coarser fish. Its flesh is moreover of a paler buff, of a less firm texture, and of very inferior quality upon the table.

Its habits and haunts are almost identical with those of the other species, like which it is not migratory or anadromous, never entering the rivers either for the purpose of spawning or in pursuit of food; although it approaches the shores, and visits the gravelly shallows of the lakes in autumn, in order to deposit its ova.

It is taken by the French inhabitants and by the Indian hunters with the torch and spear, occasionally with the sean, and also with the long line in deep water. It also strikes readily at a piece of glittering tin, or mother of pearl, made to revolve and glance quickly through the water.

There is no doubt but that with good spinning tackle, baited with minnow, shiners, or the parr of the Brook Trout, which would probably prove the most killing of the three, or with the deadly spoon, the Siskawitz might be angled for with great success, and would afford good sport, as it is a strong and powerful fish, growing to twenty-five pounds or upwards, although its usual weight does not exceed fifteen or sixteen pounds.

Neither this fish, however, nor the Namaycush, nor, so far as I know, any other of the non-migratory Lake Trout, strikes with the same fierceness and avidity, springing out of the water to take the bait, and leaping far and frequently above the surface when hooked, as the Sea Salmon, the Salmon Trout, or any of the anadromous species of this highly interesting family. The motion of the great lakers is for the most part confined to a heavy lumbering rush in pursuit of the bait, and to a strong dead pull when endeavouring to escape after being struck. They will bore down desperately at first into the deep water, but do not fight with the swift energy, or resort to the cunning artifices of the *Salmo Salar*. Strong tackle, an eighteen-foot rod, and a steady hand, will not fail to secure them, even with far less skill than is required to take a three-pounder Brook Trout in a quick running river.

I may add here, in continuation of the remarks made above, under the head of True Salmon, in reference to the young fry of all this family, that Professor Agassiz has discovered the Pinks, both of this and the preceding species, in what may be called the Parr form, with dusky lateral transverse bandings. I have not judged it necessary to give cuts of these fry, as the fact may be regarded as thoroughly established, and as the other characteristics of these young Lake Trout are so broad and distinct, that they could not be easily mistaken either for the young of any other species or for a distinct variety.

The above descriptions, as well as the representation in the woodcut, are taken, by permission, which is here gratefully acknowledged, from a spirited coloured sketch by

Mr. Elliot Cabot of Boston, who accompanied Professor Agassiz on the tour above mentioned, and from the notes of that gentleman.

It is trusted that this notice, although brief, of an entirely new *Salmo*, will prove satisfactory both to the sportsman and to the naturalist; and if the mention of its peculiarities may induce the gentle anglers of this country to pay a little more attention to the structural differences of fishes, so as to lead to the discovery of new species, several of which, it can hardly be doubted, remain still nondescript in the unfrequented waters of this mighty land, some good will have been done to the great cause of science.

THE LAKE TROUT.

Salmo Confinis—DEKAY.

The Lake Trout.

Not having been enabled this spring to obtain a specimen of this fish, which I was exceedingly anxious to do, for the purpose of comparing it with the Siskawitz and Namaycush, I take the following account from the "New York Fauna" of Dr. Dekay, whose description of the fish is very complete. It is a very closely cognate species with the two last described, but I believe it to be clearly distinct, which in the first instance I was disposed to doubt—

"*Characteristics.*—Blackish, with numerous grey spots. Body robust; comparatively short in proportion to its depth; caudal fin with a sinuous margin. Length, two to four feet.

"*Description.*—Body stout, thicker and shorter than the Common Salmon. Length of the head to the total length, as one to four and a half nearly. Dorsal outline curved. Scales, small, orbicular, and minutely striated. The lateral line distinctly marked by a series of tubular plates, arising at the upper angle of the opercular opening, slightly concave until

it passes over the base of the pectoral fin, when it proceeds straight to the tail. Head flattened between the eyes. Snout protruded, and in aged individuals with a tubercular enlargement on its extremity. Eyes large; the antero-posterior diameter of the orbits 1·5, and their distance apart 2·5; nostrils contiguous, patent; the anterior vertically oval, the posterior smaller and rounded. Under jaw shortest, and received into a cavity of the upper. The transverse membrane over the roof of the mouth exceedingly tough and thick; the numerous curved teeth in the jaws partly concealed by a loose fleshy membrane. Tongue, long, narrow and thick, with a series of teeth along the central furrow. Many series of acute teeth along the vomer and on the palatines.

"The first dorsal fin with its upper margin rounded, subtriangular, arising somewhat nearer the snout than the extremity of the caudal rays, higher than long, measuring 4·5 in height, and 4·0 along the base. It is composed of fourteen rays, the first two short, and imbedded in the flesh; the fourth and fifth rays longest. The adipose fin 1·0 long, and placed over the end of the anal fin. Pectoral fins broad and pointed, five inches long, and arising slightly behind a line drawn from the upper posterior angle of the opercle. It is composed of fourteen rays. The ventral fins, placed nearly under the centre of the dorsal fin, composed of nine rays, and furnished with a thick axillary plate. Anal fin quadrate; its extreme height 4·4, and its base 3·0; composed of twelve robust rays. Caudal fin nine inches in extent from tip to tip, furcate, with a sinuous margin.

"*Colour*—from a living specimen. All the upper portion of

the head and body bluish black. Sides of the head, base of the first dorsal, of the caudal and anal fins, with numerous rounded crowded irregular light spots. On the base of the dorsal and caudal, the spots are oblong light greenish; chin brownish bronze; pupils black; irides salmon-colour. Tips of the lower fins slightly tinged with red.

"Length, 31·3; of the head, 7·3. Weight, fifteen pounds.

"Fin-rays, D. 14·0; P. 14; V. 9; A. 12; C. $21\frac{3}{3}$.

"This is the well-known Lake Salmon, Lake Trout, or Salmon Trout of the State of New York. Among the thirteen species or varieties of Lake Trout, or Lake Salmon, so beautifully illustrated by Richardson, I cannot find this species described. It appears more nearly allied by the figure to *Salmo Hoodii*, but differs in very important particulars from this species. It occurs in most of the northern lakes of this State, and I have noticed it in Silver Lake, Pennsylvania, adjacent to Broome County, which, as far as I know, is its southernmost limit. The figure illustrating this species was from a specimen taken at Louis Lake, Hamilton County, of unusual size and vigour. The average weight is eight or ten pounds; but I have heard fishermen speak of some weighing thirty pounds, and even more. There is, however, such a strong propensity to exaggeration in everything in relation to aquatic animals, that I refrain from citing cases derived from such sources.

"They frequent the deepest part of the lake, and unlike most of their congeners, never rise to the fly.

"The flesh is of course much prized in those districts where no oceanic fish is ever tasted; but to me it appears to possess all the coarseness of the Halibut without its flavour."

This, with the exception of a few general remarks on its habits, is all that Dr. Dekay has recorded of this fish.

I cannot, however, proceed, without expressing my great surprise at Dr. Dekay's opinion of its resemblance to the *Salmo Hoodii*, known also as the Arctic Charr, the Mingan River Salmon, and the Masamacush of the Cree Indians. This is a decided long-finned Charr, beautifully coloured, of a rich lake purple, with numerous bright golden spots, and the red belly of the proper Charr. It is, moreover, an anadromous species, running up the swift rivers of the north, and descending to the salt water to recruit. Its flesh is bright red. It is one of the boldest fish at the bait known on this continent, leaping completely out of water to seize it, and flinging itself high above the surface many times in succession on being struck.

I can see nothing in which it can be compared to any of the Lake Trout, and least of all to this, which is the most worthless of all the non-migratory species. It is found, I believe, in Lake Ontario, below the Falls of Niagara, and certainly in all the New England lakes so far to the eastward as the State of Maine. In the British provinces, with the exception of Lakes Mephramagog and Champlain, I do not think that it exists.

From a careful comparison of the cut in Dr. Dekay's work, plate 38, fig. 123, as well from his description of its colouring, I have no hesitation in pronouncing it far more nearly connected with the Siskawitz of Professor Agassiz, than with any other of its congeners, although the elongated head, the shape of the fins, and especially the lobe-like formation of the caudal, clearly distinguishes it from this species.

It is to be regretted, however, that in the work of the magnitude and importance of the "New York Fauna" of the State of New York, the plates should be, as they are, so atrociously executed, that for matters of scientific examination they are all but useless, while as pictorial illustrations they are below contempt.

SALMON TROUT.

SEA TROUT.—WHITE TROUT.

Salmo Trutta—YARREL.

Sea Trout.

THIS beautiful fish, which is the Salmon Trout of the Thames, the Sea Trout of Scotland, and the White Trout of Wales, Devonshire, and Ireland, is found nowhere on the continent of America except on the eastern side of the Province of New Brunswick and in the Gulf of St. Lawrence.

It must on no account be confounded, as it has been by Dr. Smith in his "Fishes of Massachusetts," with the Brook Trout (*Salmo Fontinalis*), when they run down and remain permanently in salt water, as they do, more or less, along the whole south side of Long Island, but especially at Fireplace, at Waquoit Bay, on Cape Cod, and probably at many other points along the eastern coast; for the fish are totally distinct, as will be shown hereafter.

"It is distinguished," says Yarrel, "by the gill-cover being intermediate in its form between that of the Salmon and the Bull Trout. The posterior free margin is less rounded than that of the Salmon, but more so than that of the Bull Trout. The

line of union of the *operculum* with the *sub-operculum* and the inferior margin of the *sub-operculum* are oblique, forming a considerable angle with the axis of the body of the fish. The posterior edge of the *pre-operculum* rounded, not sinuous, as in the Bull Trout. The teeth are more slender as well as more numerous than in the Salmon or Bull Trout; those on the vomer extending along a great part of the length, and indenting the tongue deeply between the two rows of teeth that are there placed, one row along each side. The tail is less forked at the same age than that of the Salmon, but becomes like it square at the end, after the third year. The size and surface of the tail also is much smaller than that of the Salmon, from the shortness of the caudal rays.

"The habits of this species are also very like those of the Salmon, and the females are said to run up the rivers before the males. Sir William Jardine says: 'In approaching the entrance of rivers, or in seeking out, as it were, some one they preferred, shoals of this fish may be seen coasting the shoals and headlands, leaping and sporting in great numbers, from about one pound to three or four pounds in weight; and in some of the smaller bays the shoal could be traced several times circling it, and apparently feeding. They enter every river and rivulet in immense numbers, and when fishing for Salmon, are annoying for their quantity. The food of those taken with the rod in the estuaries appeared very indiscriminate; occasionally the remains of some small fish, which were too much digested to be discriminated; sometimes flies, beetles, or other insects, which the wind or tide had carried out; but the most general food seemed to be the *Talitris Locusta*, or common

sand-hopper, with which some of their stomachs were completely crammed."

"The largest adult fish of this species I have ever seen," Mr. Yarrel adds, "was in the possession of Mr. Groves, the fishmonger in Bond-street. This specimen, which occurred in June, 1831, was a female, in very fine condition, and weighed seventeen pounds."

Never having myself seen this fish in America, although perfectly familiar with it in Great Britain, but having good reason for being sure that it existed in the great estuary of St. Lawrence, and in the Bays of Gaspe and Chaleurs, I wrote, so soon as I decided on the preparation of this work, to a friend, Mr. Perley, in New Brunswick, Her Majesty's emigration officer at St. John's, knowing that I might rely as well on his kindness in supplying me with any information he might possess on the subject, as on his skill and thoroughness as a sportsman and fly-fisher, and his science as an icthyologist.

He obligingly replied to me at length, besides sending me a highly valuable report on the Fisheries of the Gulf of St. Lawrence, fully confirming my opinion of the existence of this noble and sporting fish in the province.

Without farther comment I proceed to lay his observations before my readers, premising only, that while they fully prove the identity of the New Brunswick White Trout with the Salmon Trout of Yarrel (*Salmo Trutta*), and distinguish it from the Brook Trout, whether English or American (*Salmo Fario*, or *Salmo Fontinalis*), they show some remarkable differences in habit from the same fish in the British Islands.

"You will perceive," says Mr. Perley, "that, under official

orders, I have been compelled to go into natural history; and that you may see the whole, I send some reports printed in 1847, including one on the Forest Trees of New Brunswick. I procured the second edition of Yarrel when in London last year, and the beautiful supplement containing the plates of the Salmon, from the little Parr up to the Grilse of two years, all of which I have been compelled to study.

"The White Trout of the Gulf of St. Lawrence is precisely similar to the *Salmo Trutta* of Yarrel. The drawing of Vol. II., p. 77, second edition, is a very good representation of our White Trout. In June, when in the finest condition, they are somewhat deeper than there represented"—the cut is a fac-simile of the plate in Yarrel alluded to by Mr. Perley—"the shoulder is then exceedingly thick; the head, especially in the female, is very small. I never heard of any weighing more than seven pounds. I have never seen a White Trout on this side of the province, or anywhere except within the gulf. They are of delicious flavour when newly caught, the white curds lying thick between the bright pink flakes; and they do not cloy like the Salmon.

"Many of the Common Trout (*Salmo Fario*)"—*Fontinalis?*—"also visit the mixed water of the estuaries, and very likely go out to sea. They then acquire a very silvery brilliancy, and their condition becomes greatly improved; but they cannot be mistaken, even then, for the White Trout. They are a longer fish—their heads are larger—the colour of the spots is more brilliant, and there are more of them; and the tricoloured fins leave no room for doubt, as the fins of the White Trout are very pale, and of a bluish white. When first lifted from the sea,

the backs of the White Trout are of a bluish green, just the colour of the wave; and the under part of the fish sparkles like molten silver."

In a report of the fly-fishing of the province, which Mr. Perley was good enough to enclose, I find also the following pertinent remarks on this fish:

"It is to be understood," he says, "that the whole Gulf of St. Lawrence abounds with White Trout, from one to seven pounds in weight. They proceed up the rivers as far as the head of the tide in each, but they never ascend into the purely fresh water. In the salt water they are caught only with the 'Prince Edward's Island fly,' so called, the body of which is of scarlet with gold tinsel, or of gold tinsel only, with four wings from the feathers of the scarlet ibis—the 'curry-curry' of South America.

"In the estuaries of rivers where the water is only brackish they take the Irish lake-fly with gay colours; the scarlet ibis seems the most attractive, however, in all cases. In the fresh water the Trout are quite different; they are much longer, very brilliantly coloured, with tricoloured fins of black, white, and scarlet, and numerous bright spots over the body. When the fish are in good condition these spots are nearly as large as a silver penny. They rarely exceed three pounds in weight, but are a very sporting fish; they take the most of the Irish flies, but the red hackle in all its varieties is the favourite. A brilliant hackle, over a yellow or fiery brown body, kills everywhere, all the season through.

"The Sea Trout fishing, in the bays and harbours of Prince Edward's Island, especially in June, when the fish first rush in

from the gulf, is really magnificent; they average from three to five pounds each. I found the best fishing at St. Peter's Bay, on the north side of the island, about twenty-eight miles from Charlotte's Town. I there killed in one morning sixteen Trout, which weighed eighty pounds.

"In the bays, and along the coasts of the island, they are taken with the scarlet fly, from a boat under easy sail, with a 'mackerel breeze,' and oftentimes a heavy 'ground swell.' The fly skips from wave to wave at the end of thirty yards of line, and there should be at least seventy yards more on the reel. It is splendid sport! as a strong fish will make sometimes a long run, and give a good chase down the wind."

This clear, able, and sportsmanlike account of this fine fish perfectly establishes the fact of its existence as a distinct species, intermediate between the true Salmon (*Salmo Salar*), on the one hand, and the Brook Trout (*Salmo Fontinalis*), on the other. And it must on no account be confounded with the non-migratory Lake Trouts, which have just been described, and which are sometimes erroneously and absurdly called Salmon Trout. They never quit the purely fresh water—these never leave it. These are anadromous, those stationary.

Those are a worthless fish, both to the sportsman and the epicure, comparatively speaking; these are in all respects the most valuable of the species, with the exception only of the true Salmon; and neither in excellence of flavour nor in sporting qualifications do they fall behind even him, although they are far inferior in weight and size.

Mr. Yarrel states that the length of the head in this fish is as one to four to the length of the whole body, and the depth

of the body to the length the same. The teeth, small and numerous, occupying five rows on the upper surface of the mouth, those of the central row, on the vomer, extending some distance along it, the points turning alternately to each side, one row on each side of the under jaw, and three or four teeth on each side of the tongue, strong, sharp and curving backwards, well calculated to secure a living prey, or convey food towards the pharynx.

The dorsal fin-rays are twelve in number, the pectoral thirteen, the ventral nine, the anal ten, and the caudal nineteen. When the Salmon Trout is placed by the side of a Salmon, it is in comparison darker in colour in the body, but lighter in the colour of the fins.

It is with great satisfaction that I am enabled to present this beautiful and gallant fish to my readers, and to establish with certainty its identity with the *Salmo Trutta* of Yarrel, and its existence in the North American Provinces. This fish has hitherto never been described in any American sporting work, nor I believe in any work of a scientific character, as an American species, with the exception of the Parliamentary Reports of Mr. Perley. The fish, described as the *Salmo Trutta* in the "American Angler's Guide," and in "Smith's Fishes of Massachusetts," is, as I have already observed, nothing resembling it, but the very Brook Trout described above, with the tricoloured fin, improved by a visit to salt water.

I may here observe, *en passant*, that my distinguished friend, Mr. Agassiz, was not aware, a few months since, of the existence of this fish as an American species.

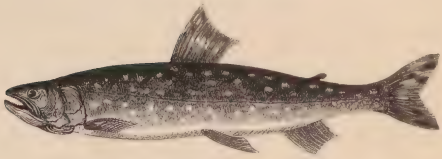
It cannot fail to prove a great acquisition to the list of the

American angler, as there is no bolder or better fish, and its haunts are of no difficult access. I learn that an English yacht is already fitting out, in order to take the field against the Sea Trout in the gulf this very summer; and I doubt not that ere long some of our New York clippers will spread their wings in emulation of their brothers of the angle from the eastern side of the broad Atlantic. I can conceive no more delightful trip, no more exciting rivalry.

THE MASAMACUSH.

ARCTIC CHARR.—HOOD'S CHARR.

Salmo Hoodii—RICHARDSON.



Masamacush. Arctic Charr.

THIS beautiful fish is given on the authority of Dr. Richardson, by whom it appears to have been first described, although discovered by Lieutenant Hood, in Pine Island Lake, latitude 54°.

It is not a little remarkable that this fish should have so long remained unknown, as it is stated by its describer "to be common in every lake and river from Canada to the northern extremity of the continent." Whether this includes the great lakes above the Falls of Niagara, it is not stated, although the language would authorise that interpretation; no distinct mention is made of it, however, as having been taken south of the Mingan River, which empties into the estuary of St. Lawrence somewhere about the latitude of 50°; all the other specimens described being taken in Winter Lake, or in the waters of Boothia Felix; it is scarcely possible, however, but that it must

be found to the southward of this line, to justify the words of so accurate and correct a writer as Dr. Richardson.

At all events, the Mingan River is in Canada Proper, in the lordship of Mingan, and is constantly visited for the purpose of Salmon fishing, by yachting parties from Quebec, scarcely a year occurring but one or more vessels are fitted out for this wild spot, which is nearly opposite to the northern side of the inhospitable, and nearly if not absolutely uninhabited, Island of Anticosti, the sport amply repaying the time and trouble.

I am personally acquainted with several very accomplished Salmon fishers who are at home on those waters, yet by none of these have I ever heard any mention of this fish, and I am well satisfied that although it must, I presume, have been taken by them frequently, it has entirely escaped their observation, being probably confounded either with the Salmon, or the Salmon Trout, although entirely distinct from either. It is remarkable as being the only Charr that is found in the inhabited portions of the United States or Canada, for although Richardson designates the Common Brook Trout (*Salmo Fontinalis*), as the *New York Charr*, I confess I am at a loss to perceive any grounds for so specifying it. One of the marked characteristics of the Charr, the greater comparative height of the dorsal fin, which will be readily observed in the cut at the head of this article, is entirely wanting in the Brook Trout, and although the vomerine teeth are disposed in a cluster in that species, after the manner of the Charrs, this alone hardly appears to me a sufficient reason for altering its nomenclature.

The other varieties of Charr, the Angmalook (*Salmo Nitidus*),

and the long-finned Charr (*Salmo Alipes*), are found in the small lakes and rivers of Boothia Felix, but as that far northern peninsula is utterly beyond the reach of the most determined angler, it is useless to give them more than this mere passing notice.

The Masamacush is, on the contrary, within easy reach of all who are willing to travel distances, without incurring either risk or fatigue, in pursuit of their game, and is found, moreover, in the very waters which afford the greatest variety and the highest attractions to the scientific fly-fisher, in their abundance of Salmon, Salmon Trout, and Brook Trout. It is also a bold and daring biter, voraciously seizing a bait of sucking carp, pork, deer's heart, or the belly of one of its own species affixed upon a cod-hook. "We took many at Fort Enterprise, in March, in gill-nets set under the ice," says Dr. Richardson, "in the neighbourhood of an open rapid by which the waters of Winter Lake were discharged into a river that remained frozen up until June. At that time their stomachs were filled with the larvæ of insects. During the summer this fish is supposed to retire to the depths of the lakes, but it reappears in smaller numbers in the autumn, and is occasionally taken in the winter in nets, but seldom by the hook, except in the spring. The spawning season is in April or May, judging from the great development the spawn then acquires, though the spawning beds are unknown to us. The Masamacush attains a weight of eight pounds, but begins to spawn before it weighs more than two or three."

Dr. Richardson does not state whether this fish will take the fly or not, but as it is not the general habit of the non-migratory

Trout of the American lakes, or of the British Charr, to do so, it may, I think, be presumed that the Masamacush, where he exists in lakes, is to be taken by trolling in deep water with a small Trout or other fish upon a heavily-weighted hook, with spinning tackle.

It is not distinctly stated, and probably is not ascertained, whether this is an anadromous or non-migratory fish. The Charrs, for the most part, are found only in the deepest parts of the lakes which they inhabit, and rarely enter the streams which feed or drain these but for the purpose of spawning, when they seek out the clearest and swiftest rivers running on gravel bottoms.

The fact, however, that the Masamacush is taken in the Mingan River, a powerful body of water having direct communication with the sea, would go far to prove that he is an anadromous fish there, at least, visiting the sea, and returning to spawn; although it is very probable that like many of this family, and like his own congener, the Angmalook, he can exist indifferently in fresh or salt water.

I doubt not that in the Mingan and similar rivers, he could be taken with the same Irish lake-flies, or the red ibis fly, which is so mortal to the Salmon Trout.

Like all the Charrs, he is red-fleshed, and of delicious flavour. And from these facts, were it not that the Masamacush is said not to exceed eight pounds in weight, I should be vastly inclined to suspect his identity with the red-fleshed and brightly-coloured lake-fish, which is occasionally taken in the Hamilton County waters, as mentioned by Dr. Bethune in his beautiful edition of Walton's Angler, at page 138, in a note; and as described to

me by Mr. Webber, the author of a series of very agreeable letters concerning the fishing of that region, which were published in the columns of the New York Courier and Inquirer during the past summer.

It is very unfortunate that, so far, none of the gentlemen who have been so lucky as to take this highly-coloured and fine fish, have possessed sufficient scientific knowledge to examine and record its characteristics in such a manner as to allow us to decide upon its identity with any known species.

The only thing which appears to be certain, is this: that it does not belong to any one of the three known species of the non-migratory Lake Trout. As it is said to have been taken by the President of the Piseco Club, a gentleman on whose authority perfect reliance may be placed, up to the great weight of twenty-four pounds, this must, in my opinion, be either an entirely nondescript fish, or merely a Brook Trout of gigantic dimensions.

It is generally described as being square-tailed, with two rows of red spots, the ventrals and pectorals deeply tinged with vermilion, and the flesh of a bright glowing carnation, and a delicious flavour. Now, this description coincides with no described fish of North America, though nearly agreeing with that of the great Common English Trout of the Thames and of the Irish lakes and rivers.

But to return to the Masamacush, as it is known to exist in the northern waters.

Its body, as will be observed in the cut, is more slender than that of any of the *Salmonidæ* heretofore described, and the head is about a sixth of the total length. The lower jaw, when

the mouth is closed, projects beyond the upper one by the depth of the chin, and it appears longer yet when the mouth is open.

The teeth of the labials, intermaxillaries, and lower jaw, are very small, short, conical, acute, and slightly curved—on the palatine bones there is a row of larger teeth mixed with smaller ones, and on the knob of the vomer, a cluster of six or seven. The tongue is armed with a single row on each side, which meet in a curve at the tip; there are also two or three scattered teeth on the centre of the tongue. The rakers and pharyngeal bones are armed with short teeth like velvet pile. Of the gill-covers, the *operculum* is very narrow, its transverse diameter being scarcely half its height. The *sub-operculum* exceeds the half of its length in height.

The Masamacush of the Mingan River, which is the fish in its normal form, according to Dr. Richardson, from whom this account is abridged, has ten gill-rays on one side, eleven on the other; dorsal fin-rays twelve, pectorals thirteen, ventrals eight, anal ten, and caudal nineteen.

The back and sides of this fish are intermediate between olive green and clove brown, bestudded with yellowish grey spots as big as a pea. A few of these spots on the gill-covers. Belly and under jaw white; the latter dotted thinly with bluish grey.

The Arctic fish is brighter in colour; the back and sides being purple, the spots distinctly yellow, and the sides, below the lateral line, tinged with a flush of lake.

Before proceeding to the Grayling, which, though of this family, is not a proper Salmon, but of the subgenus *Thymallus*, I will observe that the opinion which I hazarded in my intro-

ductory remarks concerning the existence of a distinct Salmon in Sebago Lake, near Portland, in Maine, known as the Sebago Trout, and which I proposed to designate as *Salmo Sebago*, is fully carried out by the information which I have received since writing those remarks, from a thorough sportsman, well acquainted with all the described species.

He assures me that the waters of that lake did contain a Salmon closely resembling the *Salmo Salar*, but which has in all probability become extinct. At the date of his writing, he was about to set forth on a visit to the lake, and should a fish be procurable, I shall receive it, although not in time to include it in the body of the work, at least in season to be embodied in the Appendix.

BACK'S GRAYLING.

THE ARCTIC GRAYLING.

Thymallus Signifer—Richardson, Cuvier. *Hewlook Powak*—Esquimaux. *Poisson Bleu*—Can. Voy.

Arctic Grayling.

The exceeding beauty and remarkable game qualities of this noble fish have induced me to give him a place in these pages, to which his place of nativity hardly entitles him, as he is, I fear, to be found nowhere southward of the 62nd parallel of latitude, between Mackenzie's River and the Welcome. "Its highly appropriate Esquimaux title," says Dr. Richardson, from whose fine work on the Fauna of Arctic America, I have borrowed both the matter of this article and the cut above, "denoting 'wing-like fin,' alludes to its magnificent dorsal; and it was in reference to the same feature that I bestowed upon it the specific appellation of *Signifer*, 'the standard-bearer,' intending also to advert to the rank of my companion, Captain Back, then a midshipman, who took the first specimen we saw with the artificial fly."

I may remark here, that the European Grayling has the

similar appellation of *Vexillifer*, or the "banner-bearer," in allusion to the same feature, although the fin is greatly inferior in size to that of the fish of which I am speaking. The allusion to Captain Back, then a midshipman, is founded on the fact, that midshipmen in the British navy rank as ensigns in the army, and that French officers of the same grade are styled *enseigne de vaisseau* in consequence of the same analogy.

Dr. Richardson proceeds to observe that "it is found only in clear waters, and seems to delight in the most rapid part of mountain streams. In the autumn of 1820, we obtained many by angling in a rapid of the Winter River, opposite to Fort Enterprise. The sport was excellent, for this Grayling generally springs entirely out of water when first struck by the hook, and tugs strongly at the line, requiring as much dexterity to land it safely as it would to secure a Trout of six times the size."

And this latter would be no small feat, since I find elsewhere that the fish grows to five or six pounds' weight, greatly exceeding his European congener, in size, as he does also in vigour and brilliancy of colouring.

"The characters by which the Graylings are distinguished from the Trouts," continues Dr. Richardson, "in the *règne animal*, are the smallness of the mouth, the fineness of the teeth, the great size of the dorsal fin, and the largeness of the scales. The stomach is a very thick sac; the gill-rays are seven or eight in number."

The colour of this beautiful fish is stated by the same author to be as follows:—"Back dark; sides of a hue intermediate between lavender, purple, and bluish grey; belly blackish grey with several irregular whitish blotches. There are several

quadrangular spots of Prussian-blue, on the anterior part of the body, each tinging the margin of four adjoining scales. The head is hair brown above, the cheeks and gill-covers the same, combined with purplish tints, and there is a blue mark on each side of the lower jaw. The dorsal fin has a blackish grey colour, with some lighter blotches, and is crossed by rows of beautiful Berlin-blue spots; it is edged with light lake-red. The ventrals are streaked with reddish and whitish lines in the direction of their rays.

"The scales are covered with a thickish epidermis, consequently having little lustre.

"The body is compressed, with an elliptical profile, the head, when the mouth is shut, ending acutely, but when viewed from above, or in front, the snout is obtuse. The greatest depth of the body is scarcely one-fifth of the total length, excluding the caudal, or one-seventh including it. Orbit large, distant half its diameter from the snout, and two diameters from the edge of the gill-cover. Nostrils midway between the orbit and the tip of the snout. Mouth not cloven as far back as the edge of the orbit. Intermaxillaries longer than in the *Coregoni*, but overlapping the articular end of the labials less than in the *Trutta*. Labials, thin elliptical plates, the posterior piece lanceolate, and as broad as the anterior one. Under jaw tolerably strong and rounded at the tip.

"The teeth are small, subulate, pointed, and slightly curved, standing in a single series on the intermaxillaries, in two rows on the palatines, and in clusters of six or seven on the vomer. The tongue is smooth, but the pharyngeal bones and cartilaginous rakers of the branchial arches are rough.

"Of the gill-covers, the *pre-operculum* has the form of a wide moderately-curved crescent. The *sub-operculum* is more than half the height of the *operculum*, not exceeding it in length. *Inter-operculum*, small, and acute-angled.

"The dorsal fin has twenty-three rays; the pectorals, fifteen; the ventrals, nine; the anal, thirteen: and the caudal, nineteen."

Although this exquisitely beautiful and very game fish is not, as I have previously observed, properly speaking, a native either of the United States or the British provinces, being only found in the northern part of the unsettled regions of British America, and the waters flowing from Great Slave Lake into the Arctic Ocean; still, so wonderfully are the facilities of travel increasing through the west and north, and so great is the enthusiasm of the Anglo-Norman race in all matters connected with sporting and sportsmanship, that it by no means appears to me impossible that, before many years have elapsed, the lovers of the angle, whether of English or American birth, will be found casting the fly in the glass-clear rapids of the Winter River, and the other waters of those untamed regions, for the Arctic Grayling, and the many beautiful species of Salmon that are to be taken there. Nor would there I believe be much more risk or hardship attending the performance of such a sporting tour, by a strong and well-found party, than was incurred, not only without hesitation, but with alacrity and enthusiasm, by the sporting gentlemen who crossed the Mississippi, in pursuit of the elk and buffalo, at any time antecedent to the Black Hawk war.

The excitement, the novelty, and, consequently, the charm of such an expedition, would be indescribable; and as the brief

summer of those regions is as beautiful as it is brief, while the sportsman would be brought into contact with an entirely new race of beasts, birds, and fish of chase, I can imagine nothing that would better repay the risk and enterprise of such an expedition.

All the arrangements of such a tour could be made with greatest ease at Montreal, where every facility could be afforded to the tourists by the agents of the fur companies, and where the whole of the necessary means are just as well understood, and the necessary outfit just as easily procured, as are those for a fishing excursion into Hamilton County, in New York, or for a Maine Moose-hunt in Boston.

The prairies of the West have long been explored as hunting grounds, by the sportsmen of the old world as well as by the hunters and trappers of the new—the forests and deserts of Southern Africa have afforded their trophies of the savage race; the central wilds of Abyssinia have surrendered their fierce denizens; the forests of Ceylon, and the dark jungles of the farthest India, have become familiar hunting grounds to the English sportsmen; and I think it is scarcely to be doubted that before many years have elapsed, the Swedish and Norwegian rivers being already overfished, the votaries of the rod and reel from either side of the Atlantic will be found whipping the yet virgin streams of the far north-west.

Political reasons, too, will have their weight in bringing about such a consummation; for the disturbed state of the continent is already sufficiently alarming to deter the pleasure-seeking yachter from visiting his old haunts in the soft and sunny seas of Southern Europe, while the stormier seas of the Western

World offer him peace at least and hospitality, while on these shores he will find sport, whether he affect the rifle or the rod, far superior to what he has been used to enjoy on the eastern continent. I have heard of one yacht already fitting out by an enthusiastic English sportsman, with the intent of visiting this very season the Gulf of St. Lawrence, the bays of Gaspe and Chaleurs, and the wild shores of Prince Edward's Island; and that good sport to his utmost wish may follow the adventurous owner, must be the prayer of every generous son of the gun or angle.

THE AMERICAN SMELT.

Osmerus Viridescens—Lesueur, Dekay, Agassiz.

American Smelt.

This highly-prized and delicious little fish does not properly fall within the angler's catalogue of Sporting Fishes, inasmuch as it is questionable, at least, whether it is ever taken with the hook; I have heard it positively asserted that it has been captured both with the fly and with its own roe, but I consider the fact doubtful, to say no more—the fish having probably been confounded with the Atherine or Sand-smelt, a small fish commonly known in this country as the Sparling, and much used as a bait fish. This fish, which a good deal resembles the true Smelt, both in appearance and flavour, is of a different order and family, being of the order *Acanthopterygii*, and family *Mugilidæ*, bites freely and readily, and has probably, as I observed, been mistaken by the unscientific angler.

My object in dwelling on this delicate little fish is, firstly, to correct a vulgar error which I find still prevalent with many persons, that the true Smelt is identical with the Salmon Smalt, and is, in fact, the fry of the Salmon at the commencement of his second year.

The absurdity of this is sufficiently evident from the consider-

ation that the Salmon Smalt is an immature fish, which runs down the rivers he inhabits in the spring, and returns in the autumn a Grilse, as has been related above; whereas the Smelt enters the rivers perfectly mature, and full of spawn, running up for the purpose of depositing its ova so soon as, or even before, the streams are clear from ice, and returning a spent fish in the autumn. It is a sub-genus of the genus *Salmo*, true, —but as distinct from it as a roebuck from an elk.

My second object in devoting a page or two to this little fish, is to call the attention of scientific men to the fact that there are, in the United States, two distinct species of this fish: the Common American Smelt (*Osmerus Viridescens*),—which differs from the European Smelt (*Osmerus Eperlanus*) in many particulars,—and a much smaller and more highly-scented, as well as highly-flavoured, variety, which I believe to be identical with the European fish.

Some years since, before I thought of publishing on this subject, I compared this smaller fish with the Eastern Smelt (*Osmerus Viridescens*) of Lesueur, and, although I have unfortunately lost the notes which I made at that time, and forgot the specific differences, except that the ventral fin in the smaller fish was considerably farther forward than in the common fish, I am certain of the fact that there were farther differences in the number of the fin-rays, apart from the extraordinary difference in size, which could not fail to strike the least observant.

This smaller fish, so far as I know or have heard, is never taken but in the Passaic and Raritan Rivers; and in neither of these is the large Smelt, common alike to the Eastern and the Southern States, ever seen. I have observed and examined

many thousands, by bushel baskets-full at a time, and have never seen a fish exceeding seven or eight inches in length taken from the Passaic, the general run not exceeding six; whereas it is notorious that the American Smelt is rarely taken less than ten or eleven, and thence upward to twelve and fifteen inches.

Yarrel states of the European Smelt, that they are occasionally seen ten and eleven inches long, but that this is an unusually large size.

He also describes their food, during their residence in fresh water, as consisting of small fish, with crustaceous and testaceous animals. In the Tay they are said to feed principally upon the shrimp; and I have heard it asserted by persons of integrity, that they have been caught with the same bait near Belleville, on the Passaic.

It was my intention to have instituted a full examination and comparison of these—which I am perfectly satisfied will prove to be two distinct species—this last spring: but, unfortunately, I was necessarily absent from home during the very few days of this season in which they were taken in the Passaic, and lost the opportunity of doing so. The run of them is becoming less and less numerous every successive season, and it is to be apprehended that ere long they will cease to visit us at all.

I will remark here that the habit of the European Smelt in England is very capricious in regard to the rivers which he honours with his presence. It is said that in England the Smelt is never taken between Dover and Land's End; on the eastern side of the island it is taken from the Thames and

Medway to the Tay, and on the western, in the Solway, and so far south only as the Mersey and the Dee.

A specific description of this well-known little fish would be useless, as I am unable to furnish data of comparison between the Smelt of the Raritan and Passaic Rivers in New Jersey and the *Osmerus Viridescens*.

Before proceeding farther, I will merely observe that I am well assured that it is generally believed that different species of fish cannot be taken with the hook, merely for the reason that no one has ever attempted so to take them; at least, with any bait at which there was the slightest possibility of their rising.

I know that the Shad and the Herring, contrary to all received opinion, can be taken with the fly; and I have had great sport myself with the latter fish, off the pier of Fort Diamond in the New York Narrows, catching them with a gaudy peacock-fly, as fast as I could throw it in and pull them out.

It would by no means surprise me to find that, during the time when Smelt run up our streams, they may be taken freely, either with a very small bright fly, or with morsels of shrimp or pellets of their own roe, baited upon a number-twelve Limerick Trout-hook, and thrown like a fly, on the surface. Should such prove to be the case, they would afford very pretty light fishing at a time when there is no other sport for the angler.

THE CAPELIN.

Mallotus Villotus—Cuvier.

Of this beautiful little fish, which inhabits the northern seas only, never coming farther south than the shores of Nova Scotia and New Brunswick, I am unable to offer any representation to my readers, never having seen a specimen or engraving.

He is very nearly allied to the Smelts, from which he differs principally in the smallness of his teeth.

He is stated in Mr. Perley's report on the Fisheries of the Gulf of St. Lawrence, to be "from four to seven inches in length, the under jaw longer than the upper, the colour of the back greenish, the under surface of the body silvery. They usually appear about Miscou and in the Bay of Chaleurs early in May; but sometimes not until nearly the end of that month. The Cod fishery does not commence until the arrival of the Capelin, which continues near the shores until the end of July."

Mr. Perley proceeds to state that, in consequence of the "wanton destruction of the proper food of the Cod,—Herring and Capelin,—which are taken in immense quantities, not for immediate eating, or for curing, or for bait, but for manuring the ground," the Cod fishery is utterly declining, the fisheries going to waste, and the establishments deserted and going to ruin.

"In a representation," he adds, "made to the Canadian legislature by a fisherman of Gaspe, it is stated that this fisher-

man had seen five hundred barrels of Capelin taken in one tide expressly for manure; and that he has also seen one thousand barrels of Herring caught at one time and not taken away, but left to rot upon the beach."

It is in this connection that I have here enumerated the Capelin; for he cannot be taken with the hook, so far as I can learn, and therefore is not game. But for Cod fishing, whether with the deep-sea line, or the bultow, as it is called, or sea-line, it is invaluable as a bait. Whenever it can be obtained, no other should be used.

It is an exceedingly excellent fish, however, for the table, possessing much of the flavour with the peculiar cucumber odour of the Smelt.

This wanton and stupid destruction of all kinds of game, whether feathered, finned, or furred, really appears to be a distinct characteristic of all the white inhabitants of America, wheresoever they are to be found; and it cannot be doubted that ere long they will most bitterly regret the consequences of their rapacity and wasteful folly.

In this case, the wantonness is the more remarkable, as well as disgraceful, because, as Mr. Perley well remarks, "a bountiful Providence has furnished the shores with inexhaustible quantities of kelp and sea-weed, and other valuable manures, which really enrich the soil, while it is admitted that the use of fish greatly deteriorates it.

"The legislature of Canada has been strongly urged to make it a misdemeanor, punishable by fine and imprisonment, for any person to use either Herring or Capelin as manure, and such a measure would seem to be highly desirable in New Brunswick.

To be effective, there should be similar regulations on both sides of the Bay of Chaleurs."

Doubtless this is all very true, but unfortunately the legislature of Canada is much too busy in passing bills for the reward of notorious murderers and rebels, and the opposition to the ministry much too busy in combating them, and striving to get into office again, to think of anything that could benefit the province, or tend to the good of any one except themselves and their own immediate partisans.

Their own bad passions, and factious partisanship, and no external causes whatsoever, are the bane and curse of the Canadas; but, after all, I suppose, it matters mighty little whether the legislature pass such a law or no; for no human being that I ever heard of in America, whether British or of the United States, ever dreamed of obeying the game law, except exactly in so far as suited his own convenience. So I presume the doom of the Capelin, and ultimately of the Cod, may be considered sealed.

THE WHITE FISH.

ATTHAWMEG.

Coregonus Albus—Lesueur, Cuvier.

White Fish.

This and the succeeding fish are the last two of the Salmon family, and the only two of their own peculiar sub-genus found within the limits of the United States and British provinces, although there are several other species in the Arctic regions.

In Europe they have several equivalents which are generally known as Lavarets; of these are the well-known British species the Gwyniad, the Vendace, and the Powan, of England and Scotland, and the Pollan of Ireland, all closely connected, and yet perfectly distinct from the analogous fish of America.

Here, unfortunately, these fine fish have no names at all, save the trivial designations or absurd misnomers given to them by the first rude settlers of the regions in which they are found.

The fish of which we are now speaking is probably the most delicious of all the purely fresh-water varieties; for such to all

intents and purposes it is, as a table fish, for it is not found within the limits of civilisation, except in the lakes above the Falls of Niagara, which preclude the possibility of communication with the sea. It is, however, found in the Coppermine, the Mackenzie, and other rivers which fall into the Arctic Sea, and can "probably live indifferently," as Dr. Richardson observes, "on fresh or salt water, like several species of *Trutta* and *Coregoni*, that occasionally wander to the sea, although they are not strictly anadromous."

It is claimed by the inhabitants of that portion of the State of New York that the finest White Fish of the whole western country are taken in Chatauque Lake, a small mountain tarn situated some hundred feet above Lake Erie, and forming one of the sources of the Alleghany River. I doubt not the superiority of the Chatauque Lake White Fish to the same species taken in the shallow, muddy, and turbulent waters of Lake Erie; but I entirely disbelieve in its being able to sustain comparison with that of the clear, deep, and cold waters of Lake Huron, where it is found of the greatest size, and in, as I understand, the greatest perfection.

"It is," says Richardson, "a rich, fat fish, yet instead of producing satiety, it becomes daily more agreeable to the palate; and I know from experience, that, though deprived of bread and vegetables, one may live wholly upon this fish for months, or even years, without tiring."

"In October," observes the same author, "the Attihawmeg" —this is its appellation among the Cree Indians, and it were most desirable that in the absence of any correct English nomenclature the aboriginal names could be adopted—"quits the

lakes, and enters the rivers for the purpose of spawning. It ascends the streams in the night-time, and returns to the lake as soon as it has spawned. Dr. Todd informed me that it enters the Severn River from Lake Huron about the 25th of October, and retires to the depths of the lake again by the 10th of November; but that, in some rapid rocky rivers of that lake, individuals are taken throughout the year. A few spawn in the summer. It is a gregarious fish, and resorts to different parts of a lake, according to the season of the year, its movements being in all probability regulated by its supply of food. In winter the fisheries are generally established in deep water, remote from the shore; toward the breaking up of the ice, they are moved near to the outlets of the lake; and in the summer comparatively few Attihawmeg are caught, except what are speared in the rivers. After the spawning period, the fall fishery, as it is termed, is more productive in shallow bays and on banks near the shore. I was informed in the fur countries, that this fish preys on insects, and that it occasionally, though rarely, takes a hook baited with a small piece of meat. Dr. Todd found fresh-water shells and small fishes in the stomachs of the Lake Huron Attihawmeg; indeed, shelly mollusca—*Helix, Planorbis, Lymneus, Paludina,* &c.—appear to be a favourite food of several Trout and *Coregoni,* both in Europe and America."

The fact of the Attihawmeg feeding on shell-fish is greatly corroborated by the circumstance of its differing from all the other known *Coregoni* in the extraordinary thickness of its stomach, which resembles the gizzard of a fowl; the same being the case with the Gillaroo or shell-fish eating Trout of the Irish

lochs; and, I have little doubt, with the crab-eating Trout of the Marshpee river in this country.

To the excellence of the White Fish, I can bear personal testimony when on the table, but I have never had an opportunity of examining it; and I am indebted for the description below to the "Fauna Boreali-Americana," of the author I have so often quoted.

I am informed that this fish is occasionally taken by persons engaged in trolling for the Lake Trout, or throwing the fly for the Black Bass (*Grystes Nigricans*), nor can I at all doubt that were his habits properly observed and carefully studied by a scientific angler, judging from what has been stated above in relation to his food, he might be taken with the hook with as much certainty as any other of the lake fish, unless, perhaps, the Black Bass, and he would assuredly show great sport at the end of a long line, being both a powerful and active fish.

The average weight of this fish appears to be three or four pounds, but, when very fat, it is often taken up to seven or eight; and in particular localities it attains a much greater size, having been caught in Lake Huron of thirteen or fourteen, and in Lake Manito, it is said, of twenty.

One of seven pounds, caught in Lake Huron, measured twenty-seven inches in length.

In form, the Attihawmeg is very deep in comparison to its length; one of the ordinary size, taken in Pine Island Lake, measuring as five to seventeen, exclusive of the caudal fin; but when very fat, its depth is as one to three.

The body is compressed, being much less thick than deep. The head is narrow above, with a moderately wide frontal

bone, and forming one-fifth of the length, excluding the caudal.

The eyes are large, and situated a little more than a diameter of the orbit from the tip of the snout, and nearly thrice as far from the edge of the gill-plate. The nostrils are placed mid-way between the orbit and the snout. The snout is blunt when seen in front, but its profile is more acute. The mouth has a small orifice, but, when shut, its angles are depressed.

The jaws and tongue are furnished with a few teeth, which are too minute to be readily seen by the naked eye, and too slender to be very perceptible to the finger. The vomer and palate are quite smooth.

Of the gill-covers, the *pre-operculum* is sharply curved, and rather broad; its width, in the middle, equalling the height of the *sub-operculum*. The *operculum* measures one-third more vertically than it does horizontally; while, on the contrary, the *sub-operculum* is twice as long as it is high. The *inter-operculum* is triangular. The branchial arches have each a single row of erect subulate rakers, a quarter of an inch long, and rough on their inner surfaces. The pharyngeal bones are inconspicuous and toothless.

The scales are large, irregularly orbicular, and about half an inch in diameter, with a bright pearly lustre.

Colour, in the shade, bluish grey on the back, lighter on the sides, and white on the belly, giving place to a nacry and iridescent pearly lustre in a full light. Cheeks, opercula, and irides, thickly covered with nacre.

Fins: branchiostegous rays, eight; dorsal, fifteen; pectoral,

sixteen; ventral, eleven; anal, fifteen; caudal, nineteen and seven-sevenths. The adipose fin is rather large, and situated opposite the termination of the anal. The caudal is forked and spreads widely.

It is, in short, a very beautiful fish, and no less useful than it is beautiful and delicious, affording the principal subsistence to several Indian hordes, and being the main reliance of many of the fur posts for eight or nine months of the year, the supply of other articles of diet being scanty and casual.

I shall rejoice to learn hereafter that it may turn out, as I more than suspect it may, as great a source of pleasure to the angler, as it is of profit to the fur-trader and the voyageur.

THE OTSEGO BASS.

OTSEGO LAVARET.

Coregonus Otsego—Dekay. *Salmo Otsego*—Dewitt Clinton.

Otsego Bass.

Through the kindness of my esteemed friend, Mr. Cooper, of Cooperstown, I have had an opportunity, during this present spring, of carefully examining and dissecting this exceedingly beautiful and interesting fish, as well as of testing its qualities on the table.

It is very closely cognate to the last-mentioned species, but is unquestionably distinct; differing in size, form, in the number of fin-rays, slightly in the gill-covers, and so far as I could discover without a microscope, entirely in the dental system.

Although a deep fish, it is not nearly so much so as the Atti-hawmeg; the finest specimen which I inspected, measuring eighteen and a half inches in length, and ten inches in circumference at the origin of the dorsal fin; the depth at the same point was a fraction under four inches, not being much less than a fifth of the whole length, including the dorsal. The gill-covers differed in form, in having the posterior free margin

more curved, and less vertical, the *operculum* less high in proportion to its length, and the *sub-operculum* more so. The snout was sharper and longer, and the labial plates shallower in proportion to their length.

The branchiostegous rays were eight on one side, nine on the other; the dorsal fin-rays, thirteen; the pectoral, seventeen; the ventral, eleven; the anal, eleven; and the caudal, twenty-two.

I examined the mouth as minutely as I could without the aid of a glass, and neither by my eye nor my finger could I detect the vestige of a tooth on the maxillaries, intermaxillaries, tongue, palate, or vomer, the latter parts being of a pearly whiteness, and as smooth as glass.

The pharyngeal bones were also toothless, but the branchial arches were armed with erect rakers, precisely as described in the last-named species.

The colours of this fish were the most beautiful, lustrous, and brilliant, that I ever witnessed—the back, of a rich iridescent blue, changing to greenish; the sides, cheeks, and gill-covers, glittering like mother-of-pearl, and the belly sparkling like molten silver; the fins, of a bluish green; the caudal very deeply forked; the lateral line nearly straight.

This exquisite and beautiful fish, so far as is known, is found only in the Otsego Lake, the head waters of the Susquehana River; but it would be very curious to compare it with the so-called White Fish of Chatauque Lake, a locale very similar to the Otsego, equally cut off from communication with other waters, and at about an equal elevation above tide-water. I greatly suspect that the *Coregoni* of these two mountain lochs would prove identical.

The habits of the Otsego Lavaret are but little known. It is gregarious, however, and rushes in vast shoals, early in spring, to all the shallow waters and shores of the lake, for a few days, during which he is taken in vast numbers; after that time he retires to the coldest depths of the lakes, and is seen no more until autumn, when he again makes his appearance for the purpose, it is supposed, of spawning, although the period at which the ova are deposited does not appear to be clearly ascertained, nor whether the spawning-beds are in the shoal waters of the lake, or at the mouth of its feeders.

It is lamentable to think, though but too true, that through the wanton improvidence of the early settlers, who dealt with this delicious fish much as the New Brunswickers do with the Capelin, literally, I believe, feeding their hogs with them, they have already visibly declined in magnitude, as well as decreased in number.

They were formerly taken, weighing up to four pounds; but now, the half of that weight is regarded as an unusually fine fish. The specimen which I have described above weighed two pounds and three ounces, and was an uncommonly well-fed and delicious fish.

With regard to their food, I can say nothing definitely; the stomachs of those which I examined contained nothing but a blackish earthy substance, which resembled decayed vegetable matter, and some small fragments of worms, or larvæ of insects.

I observed no thickening of the stomach, nor anything which seemed to indicate their feeding on any shell-fish or molluscæ.

Mr. Cooper informs me that he recollects but a single instance of one of these fish being taken with a bait. The fly, however, might possibly prove more successful.

The rarity, excellence, and peculiarity of the Otsego Lavaret entitle him to a place, as well as the noble race of which he is a member, though in some degree destitute of the game qualities of his order. My principal object, however, in introducing him in this place was, first, to present the whole family of American *Salmonidæ* to my readers, as complete as possible; and secondly, to reclaim with all my might against the absurdity of calling this fish a Bass, of the family *Percidæ*, to which it has neither resemblance nor kindred.

This absurdity, if possible, is rendered more flagrant by the fact that there is yet another fish, as distinct from this as possible, designated as the Oswego Bass, though it is no Bass either, but a *Corvina*, of the family of *Scienidæ*, called also the Lake Sheep's-head, which, from the similarity of title, is frequently confounded with this *Coregonus* or Lavaret, and also with the Black Bass of the St. Lawrence, which, for the third time, is not properly a Bass (*Grystes Nigricans*), and which is again, through the similarity of names, confused with the Sea Bass (*Centropristes Nigricans*), who is also blunderingly called Black Bass. So that we have actually four fish, as different one from the other as any four things can be, all blundered up together in confusion worse confounded, owing to the timidity of naturalists hesitating to alter a misnomer originating in the ignorance of those who were naturally ignorant. The scientific name and characteristics of this fish are well established, as *Coregonus Otsego*, the English of which, being inter-

preted, is "the Otsego Lavaret." And now, why should not the stupid blunder of Bass be consigned to the oblivion which it deserves, and the true appellation be applied to the fish, an appellation which assigns to this the last, not least, of the American *Salmonidæ*, a local habitation and a name?

SILURIDÆ.

THE CAT-FISH.

Huron Pimelode. Silurus, Pimelodus, Cœnosus—RICHARDSON.

Channel Cat-fish.

THIS singular and hideous family of fishes is distinguished from the others of the same order, by the skin being either naked or protected by large plates, but always destitute of true scales. The intermaxillaries are suspended under the ethmoid bone, and form the border of the upper jaw, while the labials are lengthened out into barbels, or are simply rudimental; it has, also, a second adipose dorsal fin. First rays of the dorsal and pectoral fin spinous.

This family contains twenty-five or thirty species peculiar to America, which are generally known as Cat-fish, Bull-heads, Bull-pouts, &c. They inhabit the larger lakes and rivers especially, but are found in all the waters of North America.

The commonest and the largest species both belong to the subgenus *Pimelodus*, and are well known as Cat-fish. The ordinary kind measuring only a few inches in length, and never exceeding a few ounces' weight; the largest reaching a hundred or even a hundred and fifty pounds, especially in the great northern lakes, and in the western rivers. The great Huron Pimelode, or, as it is often called, the Channel Cat-fish, which is the largest of the family, is thus described by Richardson.

"Profile oval, tapering into the tail. Head broadly oval, forming two-ninths of the total length. Orbits small, and nearer to the snout than to the gill-openings. Nostrils situate some distance before the eye. A slender barbel, half an inch long, springs from their posterior margin. Snout obtuse. Labials ending in a tapering barbel, which is an inch and a quarter long, and reaches to the gill-opening; there are also two slender barbels, one on each side of the chin. Both jaws are armed with a brush-like band of short teeth. The palate and vomer are smooth. In this genus the *sub-operculum* is wanting; the *pre-operculum* is attached to the *operculum* by bone, and can be traced by its elevated ridge. The *inter-operculum* cannot be traced through the skin. There are nine gill-rays. The gill-openings are rather narrow. The dorsal rays are—one spinous, seven soft; second dorsal, adipose. Pectorals, one spinous, eight soft; ventrals, eight; anals, twenty-four; caudals, seventeen.

The skin is smooth, thick, adipose, and lubricated by a mucous secretion. The colour is a dingy greenish brown above, and dirty white below. The flesh is very rich and gelatinous, and not dissimilar either in quality or flavour to that of the Eel. In

some places it is esteemed a great delicacy. All the Cat-fish are greedy biters, and will take almost any animal substance as a bait. After being hooked, however, although they are powerful fish, and pull hard for a while, it is yet a dead lug entirely: unlike the lively and fierce resistance of the Trouts and Perches; and they afford in truth very little real sport to the angler.

Seven species of this fish are quoted by M. Le Sueur as belonging to Lakes Erie, Ontario, and their tributary waters, besides many other varieties in the southern and western waters, where it grows to a yet more enormous size.

There is, however, so little difference either in the appearance or habits of this filthy, mud-loving and hideous fish, that the description of one species must serve for all.

The cut at the head of this article represents the great Cat-fish, or Huron Pimelode.

The (*Silurus Glanis*), Sly Silurus, or Sheat-fish, is the largest fresh-water fish of Europe, growing, it is said, to six feet in length, and attaining to three hundred weight.

Dr. Smith includes this species of *Silurus* in the fishes of Massachusetts, and Dr. Flint attributes it to the Ohio and Mississippi, both evidently confounding it with the various indigenous Pimelodes, which it greatly resembles. It differs from the American Pimelodes in having the anal fin extremely long, extending almost the whole distance from the extremity of the ventral to the origin of the caudal fin.

CYPRINIDÆ.

THE COMMON CARP.

Cyprinus Carpio—Linnæus, Cuvier.

Of this family, *Cyprinidæ*, the principal characteristics are a mouth slightly cleft; weak, and generally toothless jaws; pharyngeal bones strongly dentated; one dorsal fin; branchial rays few in number; to which may be added large fleshy lips, and bodies covered with large scales.

It comprises eighty or ninety well-known American species, not one of which is worthy of notice, as either a fish of sport or a dainty. There are in America no Carps proper, indigenous to the country—no Barbels—no *Cobitis*, or loaches. *Leucisci*, analogous to, though by no means—as stated by Dr. J. V. C. Smith, of Massachusetts — identical with the Chub, Roach, Dace, and Bleak of Europe, are found in abundance under the above names, but still more commonly as *Shiners*. The genus *Abramis*, Bream, has again several representatives in the waters of North America, but none either of this or the last subgenus can attain to dimensions which lead the angler to trouble himself about them, unless it be as bait for other fish, as Pike and Perch, for which purpose several of these fish are better

adapted than those of any other family, unless it be the young fry of the *Salmonidæ*, while in their Parr form.

In lieu of those genera, however, which exist in England and on the continent of Europe, but entirely lack American representatives, several prevail here which are totally wanting in Europe, as the genus *Labeo*, the genus *Catastomus*, Suckers, or Sucking Carp, many varieties of which are found throughout the waters of the United States and Canada, from north to south, and many species of *Hydrargyra*, analogous to the European Minnow.

Several of these last species are of great interest to the naturalist, the *Catastomi*, or Suckers especially, from the singular formation of their mouths, which are situated far below and posterior to the tip of the snout, and furnished with crimped and pendant labials, adapted for the deglutition of vegetable substances and even of mud; but to the sportsman they are of no account, as they do not take the bait, and are worth little as bait themselves, while, by the epicure, they are justly held in utter scorn.

The truth is, that nowhere under the canopy of heaven are the genus *Cyprinus* worthy to be accounted Sporting Fishes, and nowhere are they eatable—not even excepting the Carp and Tench of Europe—unless with the aid and appliances of a most careful cuisine, and by dint of stewing in claret, with condiments and spices, garlic and forcemeat balls, and anchovies, such as might convert a kid glove, or the sole of a reasonably tender India-rubber shoe into delicious esculents.

The shyness of the Carp in biting, the great size of the Bream and Barbel, and even in some waters of the Chub,

induce bottom-fishing anglers at home to take some pleasure in their pursuit and capture, but that is invariably in such slow and sluggish waters as contain no gamer or more delicate fish; and the dull, loggy, watery fish themselves, and the cockney punt-fishers, who aspire to take them, are held in about equal esteem, or disesteem, by those who know what it is to throw a long line lightly, with a cast of flies, for the vigorous-speckled Trout, or to spin, or even troll, with the parr or minnow, for the savage and voracious Pike or Salmon.

In America, none of the *Leuciscı*, Chub, Roach, Dace, or Shiners, and none of the *Abramis*, Bream, exceed five or six inches in length, and consequently are never subjects of more serious pursuit than the holiday crooked-pin and angle-worm fishing of school-boys. They are the detestation of the Trout bottom-angler, constantly nibbling away his bait, and tantalising him with vain hopes of a bite.

Of this family, therefore, so far as the true American genera are concerned, no notice need be taken in a sporting work, except as relates to two or three little fishes, to which I shall devote a few lines each, as being excellent bait for all the larger and bolder fishes.

Within the last few years, however, two European varieties have been introduced, and have become entirely naturalised in some of our waters. The Gold Carp (*Cyprinus Auratus* of Linnæus and Cuvier), or common Gold and Silver Fish of China, in the Schuylkill, and in some streams of Massachusetts, and the Common Carp of Europe, whose title stands at the head of this paper, in the Hudson, especially in the vicinity of Newburgh.

The former of these little fish is, indeed, unworthy of notice,

except as an ornamental fish, to be kept in garden tanks and fountains; but the other being much, though I must confess in my opinion *undeservedly*, esteemed in Europe, and having been deemed worthy of legislative enactments for his protection by the State of New York, I shall proceed to describe as a species, which, within a year or two at the farthest, will come within the American angler's list of game.

The mode of this fish's introduction into American waters is as follows:—Captain Robinson, who has a fine place immediately on the banks of the Hudson river, containing some fine fish-ponds, between Newburgh and New Windsor, imported some years since a quantity of Carp at considerable expense, I believe from Holland, where the species is very abundant and very fine in quality. His ponds were soon admirably stocked; but in process of time a heavy freshet carried away his dams and flood-gates, and a very large proportion of his Carp escaped into the Hudson. This fact being represented to the legislature of the State, a penal enactment was passed, heavily mulcting any person who should take any one of these Hudson River Carp, at any season or under any circumstances until after the expiration of five years from the passing of the act.

The provisions of this bill have been strictly enforced: several persons have been fined, and the fish is now extremely abundant.

I cannot here, in relating these circumstances, control myself, but must invoke the contempt and indignation of every gentle sportsman, every reasonable thinking man, upon the heads of that ignorant, motley, and *destructive* assemblage, which is entitled the Senate and Assembly of New York. For the last fifteen years not a session has passed without the strenuous and

sustained attempts of the most educated and most influential gentlemen of the State, both of the city and the agricultural counties, to induce the *faineant* demagogues of that assembly to take some measure to prevent the total extinction, within that very county of Orange, of some of the noblest species of game in existence, indigenous to that region, and once abundant, but already scarce, and within twenty years certain to be lost altogether, through the mal-practices of their destroyers, the errors of the existing game-laws, and the difficulty of enforcing them in their present state.

It is quite unnecessary to state that these efforts were wholly ineffectual—that it was found impossible to induce those learned Thebans to do anything to prevent American Woodcock from being shot before they are fledged, and American Brook Trout from being caught upon their spawning beds; but that no sooner is a coarse, watery, foreign fish accidentally thrown into American waters, than it is vigorously and effectively protected, which protection was merely granted I believe to enable "*a facetious member of the legislature*," as he is styled by the learned Dr. Bethune in his fine edition of Walton's Angler, to draw a witty comparison between the naturalisation of "scaly foreigners" and Irish voters. I dare say the "facetious member" was not devoid of hopes that the scaly foreigners would some day or other vote for him.

It is impossible to feel anything but contempt for such unutterable blockheadism, while it is equally impossible to expect anything better, after their recent exhibitions in the legislatorial line, from such a body as the New York Houses of Assembly.

Since, however, their wisdom has pronounced that henceforth the Carp is to be a game fish of America, I shall proceed to describe this "scaly foreigner," thus naturalised with a five years' exemption from liability to capture, in the waters of Hudson's river.

The European Carp is one of the fish which has been the longest known and esteemed, being mentioned by Aristotle and Pliny, although they do not at that period appear to have attained their present celebrity. They are found in most of the lakes and rivers of Europe, but thrive best in the more temperate southern districts, degenerating when they are carried farther north. It is said that in Russia they are even now unknown. "Their growth," says Mr. Yarrel, "is, however, particularly cultivated in Austria and Prussia, and considerable traffic in Carp prevails in various parts of the European continent, where an acre of water will let for as much yearly rent as an acre of land, and where fresh-water fishes, as articles of food, are held in higher estimation than in this country"—Mr. Yarrel means England, but the observation is even more applicable to the United States than to Great Britain. "Carp," he continues, "are said to live to a great age, even to one hundred and fifty or two hundred years; but they lose their rich colour—their scales, like the productions of the cuticle in some other animals, becoming grey and white with age."

The exact period of the introduction of the Carp to England is unknown, but it is mentioned in the "Boke of St. Albans," by Lady Juliana Berners, printed in 1496, and the great probability is that it was naturalised from the continent, probably

from the Low Countries, or Austria, previous to the suppression of the monastic institutions.

The Carp thrives best in ponds or lakes, and in such parts of rivers as have a slow, lazy current, and a muddy or marshy bottom.

"They are very prolific," I again quote from Mr. Yarrel, "breeding much more freely in lakes and ponds than in rivers. Bloc found six hundred thousand ova in the roe of a female of nine pounds' weight, and Schneider seven hundred thousand in a fish of ten pounds' weight. They spawn toward the end of May, or the beginning of June, depending on the temperature of the water and the season; and the ova are deposited upon weeds, among which the female is followed by two or three males, and the fecundation of a large proportion of the ova is by this provision of nature effectually secured; but they both breed and grow much more freely in some waters than in others, without any apparent or accountable cause."

The Carp, and indeed the whole family of *Cyprinidæ*, are the least voracious of all fishes, and the least addicted to animal food, the larvæ of insects, worms, the softer and more gelatinous parts of aquatic plants, and even vegetable mud, furnishing them with ample subsistence. During the winter, it is believed that they eat little or nothing, and lie, half torpid, in the mud. They are extraordinarily tenacious of life, and can be kept alive in a cool place for many days, and even weeks, if placed in wet moss, and fed on bread steeped in milk. This peculiarity renders them very easy of transportation.

They are slow of growth, not arriving at the weight of ten pounds before their sixth year; they arrive, however, ultimately

at a very great size, having been taken up to eighteen pounds, at which ultimum they are nearly as broad as they are long, measuring thirty inches in length by twenty-two or three in depth.

"They are in season for the table," says Yarrell, once more, "from October to April, and are greatly indebted to cooks for the estimation in which they are held.

"The mouth is small; no apparent teeth; a barbule or cirrus at the upper part of each corner of the mouth, with a second smaller one above it on each side; the nostrils are large, pierced at the second-third of the distance between the lip and the eye. The eye is small: the *operculum* marked with striæ radiating from the anterior edge; nape and back rising suddenly. The dorsal fin-rays are twenty-two in number; the pectorals, seventeen; ventrals, nine; caudals, nineteen. The first dorsal fin-ray is short and bony, the second also bony and strongly serrated posteriorly. The first anal fin-ray is also bony and serrated posteriorly. The tail forked, the longest rays as long again as those of the centre. The caudal rays of the two halves of the tail always unequal in number in the *Cyprinidæ*. The body covered with large scales, about twelve rows between the ventral and dorsal fins; the general colour golden olive brown, head darkest; irides golden; belly yellowish white; lateral line interrupted, straight. Fins, dark brown."

This fish is very well adapted for keeping in muddy stew-ponds, where he will become very fat, and can be used with advantage, when no other fish is to be procured.

THE AMERICAN ROACH.

Leuciscus Urtilus?

The American Roach is a pretty, lively little fish, common to most of the ponds and small running streams of the Middle and Northern States, and is closely analogous to the European fish of the same name, although it never approaches it in size. In England the Roach has been taken up to the weight of five pounds; in the United States it rarely exceeds five or six inches in length, and together with its congeners, the Chub and Dace, as they are generally termed, though none of them identical with the European species, are seldom taken except by school-boys, and never put on the table except in remote country districts, where sea-fish and the better inland varieties being unknown, anything will pass muster, in this line, as dainties.

The Roach is readily distinguished by his blood-red irides, and the ruddy tinge which borders his pectoral, ventral, and anal fins. His head is thick and obtuse at the snout, the labials coarse and fleshy. The eye large, and situated midway between the tip of the snout and the posterior margin of the gill-covers. The gill-covers are moderately curved, forming an irregular semicircle. The pectoral fin has its origin immediately behind the edge of the *sub-operculum*. The origin of the dorsal is midway between the snout and origin of the caudal fin, and the ventrals vertically under it. The caudal fin is powerful and lunated. The dorsal rays are ten in number; the pectoral

sixteen; ventral, nine; anal, eleven; and caudal, nineteen. This little fish is gregarious, swimming in shoals, and feeding on worms and herbs. It is admirable as a bait for Pike, and for the larger varieties of Perch and River Bass, being, I think, preferred by them to any other fish, as the Parr is by the Sea Salmon, and the larger species of Lake and Sea Trout. The Chub and Dace are also good for the same purpose, but inferior to the Roach. As sporting fish, it would be a loss of time to describe them at length. The American Chub never exceeds ten inches.

THE NEW YORK SHINER.

Stilbe Chrysoleucos—Agassiz. *Cyprinus Chrysoleucos*—Mitchil.

New York Shiner.

This beautiful little fish is common to almost every pond and stream throughout the temperate regions of North America, from the waters of New England to those of Lake Huron. It is found associating, to a certain degree, with the species last described, and still more commonly with the Sun-Fish (*Pomotis Vulgaris*), and the Yellow Perch (*Perca Flavescens*), though it undoubtedly falls a victim to the voracious appetite of the latter fish, when it grows to a large size. It loves gravelly shallows, on which it spawns, and is constantly to be seen sporting among the large water lilies.

Like the species last named, it is an excellent bait both for Perch and Pike, and is often taken on spinning tackle by great Trouts, whether brook or lacustrine.

It belongs to that group of *Leucisci* which have the dorsal fin far back, and in this respect greatly resembles the sub-genus *Abramis*, or Bream.

Its head is small, smooth, and depressed above. The mouth is small, and destitute of teeth. The eyes are large, with yellow irides. The body is very deep, being very nearly one-third of the length, excluding the caudal fin. The branchiostegal rays are three in number; the pectoral, seventeen; ventral, nine; dorsal, nine; anal, fourteen; and caudal, nineteen.

The upper part of the head, back, and sides, dark glossy green; lower sides, and belly, silvery white, with golden reflexions. Dorsal fin, brownish yellow; pectorals, reddish buff; ventrals, dull lake; anal and caudal, dull reddish brown, streaked with lake.

Of this group, there are several species, all abundant, and affording much sport to school-boys and young ladies. To the angler, except as bait, they are little worth, and to describe one variety, as a type of the species, will be amply sufficient.

AMERICAN BREAM.

Abramis Versicolor—Agassiz.

American Bream.

The Bream of America, of which there are several inferior species, like the others of this family which I have enumerated, never grows to any size, and is very little accounted by the angler in general, though in some of the western waters, where they bite freely, they are sometimes angled for with the small red worm, and are accounted a delicate pan-fish.

They are distinguished from the other *Cyprini*, by the great depth of their bodies, by having the dorsal set very far back, behind the extremity of the ventral, and by the great length of the dorsal fin.

The tongue is smooth, as well as the jaws and palate, but the lower pharyngeal bones are set with large teeth.

Like the other *Cyprini*, the Bream are among the least carnivorous of fishes.

This is a beautiful species. The back is dark, of a hair-brown hue, varied with many coloured changeable reflexions; the sides,

golden yellow; and the belly, silvery white; the dorsal and caudal fins, brown; the others, yellowish, tinged with red.

The branchial rays are three in number; the dorsal fin-rays, twelve; the pectorals, twelve; the ventrals, seven; the anal, twenty-seven; and the caudal nineteen.

A little fish, closely resembling this in form, is described and figured in Dr. Richardson's "Northern Zoology," on the authority of Lieut.-Colonel Smith, who took it at the confluence of the Richelieu and St. Lawrence. It is known to the Canadians as *La Quesche*. In form, it closely resembles this species; and in colour, the last described; but it has one spiny ray in the dorsal, and one in the anal fin, and a toothed tongue, which would seem to divide it from the genus *Abramis;* while the size of the anal divides it from the true Carps. It has, moreover, small scales, and barbels.

MINNOWS.

Hydrargyra—Auctorum.

American Minnows.

The Minnow Proper of Europe (*Cyprinus, Leuciscus, Phoxinus*), is unknown to the waters of North America, but as their equivalents, and analogous to them, we have innumerable species of the *Hydrargyra*, or American Minnow; which, in general appearance, habits, and haunts, are very nearly assimilated to the European fish.

Its food consists of aquatic plants, small worms, and minute portions of any animal substances. It bites boldly and readily at small red worms, gentles, or the larvæ of any of the *Phryganea*, known as caddis-baits, stick-baits, and the like, on the least Limerick hooks, number twelve; and is constantly taken by boys with a worm alone tied to a fine string, which the little fish swallows so greedily that he is pulled out before he has time to disgorge it.

Under many local names this beautiful little *Cyprinus* is found in every swift-running stream with a gravelly bottom, and in the shallows of every pond or lakelet throughout the country. They are generally known as Killy-fish, and are an excellent bait for fish of almost every kind that prey on other fish.

As live bait for Pike, Perch, or Cat-fish, they are not to be equalled; and in spinning or trolling they are excellent for the noble Striped Bass, the Pike, the Salmon, the Lake Trout in all its varieties, and for the Brook Trout—especially those which are found in the tide creeks, where they are less willing than in other waters to take the fly. A more particular description of so common and well-known a fish would take up space needlessly, which is more required for other parts of my subject; and the species are, I was almost about to say, innumerable. Three of the commoner varieties, and those most useful as bait, are represented above.

CLUPEIDÆ.

THE HERRING.

Clupea Harengas.

The Herring.

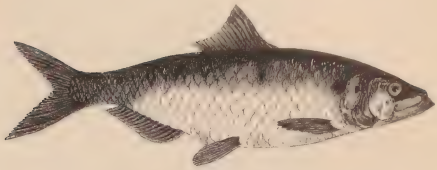
The Common Herring, which visits both continents, runs into the mouths of all the northern and north-eastern rivers of North America, and is not only greatly sought for as an article of food, but really affords very excellent sport to the angler. In spring, when he enters the estuaries in full condition, and full of spawn, he leaps freely at any gaudy-coloured fly—whether of the peacock feather, or, what is yet better, a four-winged fly of the scarlet ibis and silver pheasant, on a scarlet chenil body, not unlike the fly used in Black Bass fishing, but of a smaller size. The best way to use it is with a single BB shot attached to the gut an inch or two above the fly, so as to troll with it, as it were, slightly sunken below the surface. I have taken them in this manner off Fort Diamond at the Narrows, almost as fast as I could cast and draw in the fly.

The appearance of this fish is so well known that a very particular description is hardly necessary. The length of the head to the body is about as one to four, the depth to the length of the body as one to five. The upper part of the fish is a fine blue, with green and other reflections, when viewed in different lights; the lower part of the side and belly silvery white; the cheeks and gill-covers silvery. Dorsal and caudal fins dusky; the fins on the lower parts of the body almost white. The lower jaw is much longer than the other, with five or six small teeth extending in a line backwards on each side from the anterior point; four rows of small teeth on the central upper surface of the tongue, and a few small teeth on the central surface of the upper jaw. Branchiostegous rays are eight in number; pectorals, sixteen; ventrals, eight; anal, sixteen; dorsal, nineteen; and caudal, eighteen. The scales are large. The caudal fin deeply forked.

Several other species of Herring are common to the waters of the United States, but this is the only one which is taken with the fly, or can be accounted as game to the sportsman.

THE SHAD.

Alosa Præstabilis—Dekay.



The Shad.

This delicious and well-known fish, which is by many persons esteemed the queen of all fishes on the table, has been, until very recently, regarded as one that could be taken only with the net, and therefore of no avail to the angler. It is, however, now clearly proved that, like the Herring, the American Shad will take a large gaudy fly freely, and being a strong, powerful, and active fish, affords great play to the sportsman.

It is undoubtedly the fact that, until within the few last years, fishing in the United States, except of Trout, having been practised rather as a means of providing the table, than as a matter of sport, it has been taken for granted that many species of fish, which are easily captured by the seau, will not take the bait or the fly; and few species have been pursued as game except those which are not easily caught otherwise than with the hook. Fly-fishing, moreover, having been a few years ago confined to a very few individuals, and even now being comparatively limited, it was attempted only with those families

which could hardly be otherwise captured. Now, however, *nous avons changè tout cela,* and opportunities for the practice of this delightful art are sought for so eagerly, that any person is regarded in some degree as the sportsman's benefactor if he introduces to his notice a new species which will afford sport with the artificial fly.

It is, as I have observed, indisputably true, that on his entrance into fresh water from the salt, for the purpose of spawning, the Shad will readily take a gaudy fly, the more readily the higher he runs up into the cold and highly aërated waters in the upper parts of our large rivers, where also they are taken in the greatest perfection, as for instance in the Delaware so far up as Milford, in Pike county, Pennsylvania.

The New York Shad (*Alosa Præstabilis*) was, I believe, first distinguished specifically by Dr. Dekay of New York, having been previously confounded with the Allice Shad of Europe (*Alosa Communis* of Cuvier, *Clupea Alosa* Auctorum), to which it bears a very considerable resemblance, although I presume that the distinction can be fully made out.

The body of this fish is deep and compressed, the thickness rather less than one-third of the length. The length of the head is to that of the whole fish as one to six; the depth to the length as one to four. The scales are very large; the tail long, slender, and deeply forked.

The dorsal fin-rays are nineteen; the pectoral, fifteen; ventral, nine; anal, twenty-six; and caudal twenty. The greatest depth of the body is just before the ventral fin. The Shad has no distinct lateral line; its abdominal edge is strongly serrated, especially behind the ventrals.

The top of the head and back are dusky blue, with brown and green reflections in particular points of view. There is a single dusky spot behind the operculum. The irides, sides of the head and body, are of a silvery white, with a tinge of copper-colour. The dorsal and caudal fins are dusky; the pectoral, ventral, and anal fins, white.

The flesh of the Shad is perhaps the most delicate of any existing fish; and, though it lacks the lusciousness, as well as the glutinous fin, of the Turbot, it is preferred to that fish by many judicious epicures, notwithstanding the drawback occasioned by its innumerable and sharply-pointed bones.

From personal experience and success, I can assure the fly-fisher that he will find much sport in fishing for the Shad during his upward run in the spring, with a powerful Trout-rod, a long line, and such flies as he will procure in perfection at Conroy's, in Fulton-street, New York.

THE COMMON PIKE.

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ESOCIDÆ.

This family, the Esocidæ, of which the true Pike (*Esox Lucius*) of Europe is the type, is largely represented in the waters of the United States and the Provinces; six or seven distinct species having been discovered, exclusive of the formidable Garpike (*Esox Osseus*), of the south-western waters, which, instead of scales, is cased in a complete armour of rhomboidal plates; and which is held, by Mr. Agassiz and other distinguished naturalists, to be a connecting link between the animals of the present period, and those contemporaneous with the *Saurians*, and other extinct races.

The fish of this family are distinguished, generally, by the want of the second dorsal or adipose fin, by the situation of the dorsal very far backward and opposite to the anal fin, and by having the border of their upper jaw either formed solely by the intermaxillaries, or by having the labials destitute of teeth, if they enter at all into its composition. The mouth is always large, and the teeth sharp and powerful, but the shape and proportional length of the jaws vary greatly in the various species, as do the situation and number of the teeth, and the formation of the gill-covers; and by these particulars are the species distinguished.

The principal of these various species, are—

The Maseallonge (*Masquecallongé, Esox Estor*), of the Great Lakes.

The Northern Pickerel (*Esox Lucioides*), of the same waters.

The Common Pickerel (*Esox Reticulatus*), of all the ponds and streams of the Northern and Midland States.

The Long Island Pickerel (*Esox Fasciatus*), probably peculiar to Long Island, formerly Nassau Island, on the southern coast of New York.

The White Pickerel (*Esox Vittatus*), of the Ohio, the Wabash, and others of the western waters, and

The Black Pickerel (*Esox Niger*), of Pennsylvania.

Of all these species, the first two form the type, all the others following the formation of the head, which is remarked in one or other of these, as regards the comparative length of the snout, the formation of the lower jaw, the dental system, and the gill-covers. So marked is this difference, that, in addition to the wood-cuts of the entire fishes, I have thought it well to give large representations of the heads of these two noble fish; and by examining these with a little care, and comparing them with the heads of any of the smaller varieties, it will be easy to distinguish to which type any one of them belong.

Thus, any person will at once perceive that the Common Pickerel, in the comparative length of the jaws, and the beak-like form and scanty dentition of the lower mandible, follows the type of the Maseallonge; while the Long Island species resembles in the short obtuse snout, and extension of the teeth to the tip of the lower jaw, the Northern Pickerel.

The same thing will be found to be the case with all the other subspecies, although the differences between them are so trifling, and so purely technical, while their general resemblance is so great, and their habits so entirely similar, rendering it impossible to mistake them for fish of any other family, that I have deemed it superfluous to multiply examples, or to give specific descriptions of more than the first four species; contenting myself with enumerating the others, and indicating the localities in which they are to be found, which is altogether sufficient in order to prevent confusion.

THE MASCALONGE.

Masque-allongè.—Canadian French. *Esox Estor*—Cuvier, Agassiz.

This magnificent fish, which is the finest, largest, and most excellent food of all the Pike family, is found only in the great lakes and waters of the St. Lawrence basin, not having been discovered in any of the rivers or lakes which discharge themselves into Hudson's Bay or the Polar Sea, nor yet, so far as I have been able to ascertain, in any of the smaller lakes of the United States which shed their waters northerly into the St. Lawrence. It is stated that "in the spring, which is its spawning season, it frequents the small rivers that fall into Lake Simcoe"—which discharges itself by the Severn into Lake Huron—and that "it feeds on small, gelatinous, green balls, which grow on the sides of banks under water, and on small fishes."

This great Pike is said, by Dr. Richardson, to attain the weight of twenty-eight pounds, but it unquestionably grows to a much larger size, though I cannot state with precision the greatest dimensions that he has been known to acquire. Dr. Dekay says that he has been known to exceed four feet in length, which, having in view the breadth and depth of this fish when in condition, would give a probable weight of sixty or eighty pounds, which I believe to approach his maximum. He is a bold and most voracious fish.

The cut accompanying this article and the following description are taken from a specimen preserved in spirits, in the

ESOX ESTOR—CUVIER; AGASSIZ.

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possession of Professor Agassiz, of Harvard University, which measured about two feet and a half in length, and weighed eighteen pounds.

The length of the head to that of the whole body was as two to nine.

The snout, from the orbit of the eye forward, singularly elongated and acute. The anterior edge of the orbit, midway between the tip of the snout and the posterior margin of the free gill-cover. The border of the upper jaw is formed of the maxillaries alone, the edges of which are furnished with several rows of long, powerful, and exceedingly sharp, awl-shaped teeth, the points curving slightly forward. The vomer and palatine bones are covered with card-like clumps of spiny teeth, as are the base of the tongue, and the pharyngeal bones. The tongue itself is soft.

The lower jaw is considerably longer than the upper; it is armed for something less than half its length with very powerful recurved fangs, the two largest being in front, a little posterior to the tip of the tongue. Beyond these the lower jaw is toothless, curved upwards, with sharp, horny, beak-like edges; and in these points, particularly, is it distinct from the following species.

Of the gill-covers, the *pre-operculum* is nearly vertical, and but slightly curved; the *operculum* much higher than it is broad, and nearly four times as high as the *sub-operculum*, which is slightly rounded posteriorly. The branchiostegous rays are eighteen in number.

The body and head are quadrangular, flattened above, and much compressed at the sides. The dorsal fin is directly above the anal; the caudal powerful and deeply forked.

The fins, according to Professor Agassiz's singularly precise mode of enumeration, contain—the dorsal, twenty-two fin-rays; anal, twenty; ventral, thirteen; pectoral, eighteen. The main part of the caudal fin is divided into two somewhat unequal lobes, containing the upper, nine; the under, eight fin-rays; while above and below the two larger lateral rays, there are nine smaller rays.

In colour, it differs from the Northern Pickerel in having the general tint of the body lighter than the markings. The back and upper part of the sides are dark, changing from greenish to bluish grey on the sides, which are irregularly dashed with darker spots and splashes. When exposed to a strong light, every scale reflects bright colours, which vary as the fish is moved; but there is no fixed pale mark on the tip of the scales, as in the succeeding species.

The Mascalonge, which owes its name to the formation of the head—*masque-allongé*, long-face or snout, Canadian French—but which has been translated from dialect to dialect, maskinonge, muscalunge, and muscalinga, until every trace of true derivation has been lost, is said to be much more common in Lakes Erie and Ontario than in the more northern waters of Canada; but this will, I fancy, prove to be erroneous, as I know them to be taken of great size, and remarkable excellence, in Lake Huron.

It is the boldest, fiercest, and most voracious of fresh-water fish; and there is none, unless it be the Great Lake Trout, that can offer any adequate resistance to his attacks. It is said that even the spiny dorsals of the *Percidæ* do not protect them from his ravenous attacks.

He bites daringly at a dead bait played with spinning-tackle, or even with a simple gorge and trolling-hooks. He is, moreover, readily taken with that murderous instrument, the spoon, or even by a bait of tin or red cloth, made to play quickly through the water.

Before passing to the next species, I cannot but pause to notice a strange error of nomenclature, in Mr. Brown's comprehensive little volume, "The American Angler's Manual," to which I have alluded before, by which he transforms the term *Esox*, the specific name of every member of the Pike Family, as assigned by Linnæus, into the *Essex*, which he appears to conceive a distinctive term peculiar to the Mascalonge, which he calls "the Essex or Muscalinga of our western lakes." I note this error, not from any desire to underrate a useful and valuable little book, but merely to guard against its adoption by anglers in general.

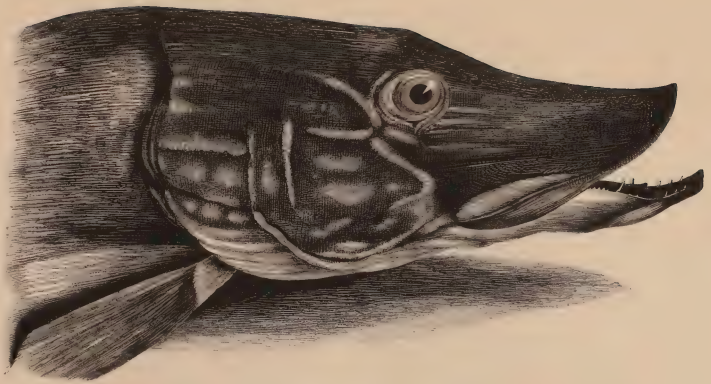
GREAT NORTHERN PICKEREL.

Esox Lucioides—Agassiz.

This great Pike, like the last, is peculiar to the basin of the St. Lawrence, and was first clearly described and specified during the scientific tour to Lake Superior, which I have already mentioned, by Professor Agassiz, who pointed out its distinctions, both from the European Pike and the Mascalonge, to the former of which (*Esox Lucius*) it is by far the most closely allied, although it appears to have been confounded with both, —Lesueur, who first gave a distinct specific name to the Mascalonge, having described it as the fish now under consideration, *Esox Lucioides*, and not at all as *Esox Estor*.

The Northern Pickerel is taken up to the weight of sixteen or seventeen pounds, but rarely, I believe, exceeds that weight. It is an exceedingly handsome fish, longer and slighter, in proportion to its depth, than the Mascalonge.

Its body is four-sided, the back broader and flatter than the belly; the vertical diameter is equal to about one-seventh of the body, caudal included; the transverse diameter is two-thirds of the vertical; the body carries its thickness to the dorsal fins, and then tapers into the thin tail; the sides are compressed and flattened; the head is about one-fifth the length of the body; the snout not nearly so long, and much more obtuse, than in the Mascalonge; the under jaw does not exceed the upper in length nearly so much as in that fish, and is armed around all the fore part with a single row of small, slightly-hooked teeth;



HEAD OF BOX [illegible] OLDER

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on the sides of the lower jaw are a row of larger awl-shaped teeth, implanted in the bone; the palate bones, vomer, and pharyngeal arches, are all armed with bands of small sharp teeth, like carding machines, as in the former species; the tongue is broad, and truncated at the tip.

The gill-covers are nearly as they are described in the Masca-longe, except that the edge of the *sub-operculum* is straighter and more vertical, and that the *opercula* are in a slight degree scaly.

The gill-openings are very large: and the branchiostegous rays are fifteen in number, or more numerous by two than in the English Pike, which differs from the Northern Pickerel moreover in the number of all the fin-rays, in having the cheeks and *opercula* covered with regular scales, as in the *Esox Reticulatus*, and in the teeth on its vomer and palatine being dispersed into lines, rather than planted in serried patches.

The Northern Pickerel has dorsal fin-rays, twenty-one; anal, eighteen; caudal, seven above and seven below the larger lateral rays; the whole caudal divided into two unequal lobes, the upper of nine, the lower of eight rays; the ventral, eleven, and the anal, sixteen.

The back of this beautiful fish is of a rich blackish green, which changes on the sides to greenish grey; there is a bright speck on the tip of each scale, which gives a singularly light and sparkling aspect to the whole fish. The belly is of a lustrous pearly white. There are several rows of oblong, diamond-shaped, yellowish grey spots on the sides of the head, body, and tail. The cheeks are varied with emerald green reflections, the under jaw and gill-rays white; the irides purple, with a golden

band around the pupil; the dorsal and caudal fins are blackish green, marked with patchy bands of a darker oil-green; the anal greenish gray, with orange margins, and a few dark spots; the ventrals the same, with orange tips, but without spots; the pectorals dusky yellow.

The Northern Pickerel is equal in boldness and voracity to the Mascalonge, and to the northern European Pike, from which he differs in the fin-rays, dental system, gill-covers, and very essentially in the colouring,—the Pike being banded or mottled, and having no indication whatever of the regular rhomboidal spots which mark the sides, and form a characteristic of the Northern Pickerel.

He takes any sort of bait in spinning or trolling, and being readily captured by set baits through the ice, forms a very essential article of food to the Indian hunter when the chase fails him. No animal food of any kind comes amiss to this fresh-water tyrant. Fish of every variety, even his own species, and the spiny Perch, the immature young of wild fowl, rats, reptiles of all sorts,—in short, every living thing that comes within his reach ministers instantly to his voracious appetite.

But the baits by which he is most sportingly secured are the small bright *Leucisci*, or Shiners, at the end of a double swivel trace, or a live frog, which he can rarely refuse.

ESOX LUCIOIDES.—AGASSIZ.

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THE COMMON PICKEREL.

Esox Reticulatus—Lesueur.

Throughout the United States, excepting only the extreme western and southern waters, this is perhaps the commonest of all the game fishes; from New England to the western limits of Pennsylvania, not a river, pond, or streamlet but abounds with this bold and rapacious fish; and it is probable that, like many other of the northern fish, he is found in the waters of the hill districts of Virginia, Carolina, and even of the Western States, although in such locations he is lost sight of among the tribes peculiar to those regions.

With regard to the Southern States especially, it is almost impossible to arrive at anything like certainty concerning the species or varieties of game fish to be found within their limits, from the universal misapplication of names, and the unhappy tendency of sportsmen, to which I have already made allusion, to adopt any barbarous local misnomer, rather than to make themselves acquainted with the true specific names, and to learn the distinctions, so as to speak understandingly of the game which they take.

It is indeed a hopeless task to hunt up the real peculiarities and true genera of fish, known in their own regions as the "Welshman," the "Pampolin," and such other denominations, which of course are not to be found in any work of natural history, while the people, who are in the habit of taking them

daily, can give you no information, nor indeed data, on which to found an opinion, except that they are "very like a whale," or a Trout, as it may be. I mention this here *en passant*, because I am perfectly prepared to find myself violently assailed, and pronounced utterly incompetent to prepare a book of this nature, because I have not included "that delicious fish, the pride of our southern waters, well known to the real sportsman, the noble 'Pampolin,' or the unrivalled 'Welshman,' as it may be, in my list of game fishes." But I have made up my mind to peaceful submission, deeming it quite enough to have investigated the identity of what it amuses southern gentlemen to call "Trout," and Western New Yorkers "Bass" and "Sheep's-head," without troubling my head about mere provincial barbarisms. I believe the "Pampolin" to be of the Mackerel family, and the "Welshman," which is described as a bold biter at small fish, worms, and the like, to be a Percoid fish, analogous to Rock-Bass (*Centrarchus Æneus*), or perhaps a *Corvina*, analogous to the *Malashegane*, or Sheep's-head of the lakes.

The Common Pickerel—to return to my subject—does not in general exceed five pounds, and in most districts this is considerably above his average, which does not, I think, go beyond two and a half or three pounds, but they are occasionally taken in the smaller lakes, and in some few of the more sluggish streams, of infinitely larger size, even so far, it is said, as to twelve and fifteen pounds' weight; but such instances are rare, even if they can be relied upon as facts,—which I am somewhat inclined to doubt, thinking that they have probably been mistaken for some other cognate species.

In the year 1838, I myself took a Pickerel which weighed fifteen pounds three ounces, under Stillwater Bridge, on the Hudson River, while fishing for Black Bass (*Grystes Nigricans*), with a large gaudy fly, and landed him, after a long and severe struggle, having only a light fly-rod, and neither gaff nor landing-net, although I was fishing with a Salmon-reel and two hundred yards of line.

I was not at that time sufficiently conversant with minute distinctions to say positively to what species this large fish belonged, and I unfortunately took no notes at the time. According to the best of my recollection, however, it was a longitudinally spotted fish, and if so, was probably a stray Northern Pickerel, which had found his way down the canals, from the basin of the St. Lawrence, into that of the Hudson.

And this, which would at first seem a highly improbable, if not impossible hypothesis, becomes at once reasonable, when the fact is known that three, at least, of the fish peculiar to the great lakes and to the waters of the St. Lawrence, have found their way into the Hudson and its tributaries since the opening of the various canals, and are now taken abundantly within the State of New York—these are the greater Black Bass (*Grystes Nigricans*); the Oswego—not to be confounded with the Otsego—Bass (*Corvina Oscula*); and the Rock Bass (*Centrarchus Æneas*).

Any of these species, in order to reach the Hudson, must descend the canals, and take advantage of the moment when the boats are passing through the locks, and the gates opened—which, when we consider the commotion of the water, the

splashing, hubbub, and confusion which occurs at such times, is in itself sufficiently extraordinary, and seems to go far toward proving that fish, except as regards feeling, are much less shy than is commonly believed, and toward abolishing the idea that they are driven out of their favourite rivers by craft or steam-boats.

If one species, however, can succeed in passing these numerous obstacles, there is nothing to prevent another from doing likewise; and it is in no respect more difficult to believe that the Northern Pickerel should so make his way to our southern waters, than that the varieties of Bass above mentioned should —as it is well established that they have done—establish themselves as an indigenous fish in the same.

From what I have personally seen, therefore, of the Common Pickerel (*Esox Reticulatus*), I am a good deal inclined to doubt the tales I have heard of its great size; and, until I shall be satisfied, on personal examination, am unwilling to credit him with a growth exceeding six or seven pounds.

This fish, as will appear from examination of the cut, follows the type of the Mascalonge, in the elongation of the snout, the curvature of the lower jaw, and the smallness, though not absolute deficiency of teeth in the fore part thereof.

It is easily distinguished by its having its cheeks and gill-covers completely cased in small scales, and by the brownish lines on its flanks, occasionally intersecting each other, like the meshes of a net, whence the name *Reticulatus*.

In form, this Pike closely resembles the others of his family. His body is quadrilateral, the back broader than the belly; the depth is to the entire length, including the caudal, as one to

seven, the thickness is about two-thirds of the depth; the length of the head to the entire length is as one to four; the posterior edge of the orbit is midway between the tip of the snout and the posterior margin of the free gill-cover; the origin of the ventral fin is midway between the tip of the snout and the fork of the caudal; the termination of the caudal opposite to the origin of the anal; the gill-covers are nearly vertical, and very slightly rounded, except the margin of the *sub-operculum*, which is very short as compared with the *operculum;* the branchiostegous rays are nine in number; dorsal fin-rays, twenty; pectoral, sixteen; ventral, ten; anal, twenty; caudal, eighteen, seven above, and seven below the great rays.

The back is of an olive green with blue reflections; the sides, olive green fading into greenish yellow, with vertical lines of dull brown occasionally crossing one another, so as to form a sort of irregular network; the dorsal and caudal fins are of an olive brown clouded with green; the pectorals and ventrals, greenish brown, margined with dull yellow; the anal, dusky green; the irides, golden yellow; the cheeks and *opercula*, which are covered with small scales, are olive green, with brownish marks and reflections. The snout, brown; the lower jaw and gill-rays, white; the belly, white, marked with brown.

This is the Common Pickerel of the Middle and Eastern States; and is the fish intended, when the word Pickerel is used without any epithet or definition. It is rather a favourite fish; and has been injudiciously introduced into many fine Trout ponds and streams, which have in consequence lost all

their attractions to the fly fisher, but now swarm with this coarser and comparatively worthless fish.

He is a bold biter, and affords considerable sport when hooked; but is coarse, watery, and of small value on the table.

THE LONG ISLAND PICKEREL.

Esox Fasciatus—Dekay.

Long Island Pickerel.

This, which is the smallest and most insignificant of the family, so far as its sporting or epicurean qualities are concerned, was first distinguished and named by Dr. Dekay, of New York.

Its principal characteristic is the very remarkable size of its scales, which, in most of the family, even in the enormous Mascalonge, are very minute and slender.

In this little denizen of the running brooks and clear Trout ponds of Long Island, their scales are larger than in any other of the family, so as to make it resemble, in that particular, some of the *Cyprinidæ*, rather than its own tribe.

In other respects, size excepted, it differs little from the other Pike, which follow the type of the Northern Pickerel, rather than that of the *Mascalonge*, to which variety it belongs; as is readily seen in the short snout, straight lower jaw, of this small fish, the latter carrying its teeth, of full size, quite round the fore part of the jaw.

The Long Island Pickerel rarely, if ever, in those waters, exceeds a pound weight, and that is greatly above the average,

which is probably nearer one-half that size. It is less voracious also than the larger members of its family, and is said to be in no wise detrimental to the Trout, which literally swarm in the same waters. Indeed, its size would render it innocuous to anything beyond the small fry, as a well-grown pound Brook Trout would be considerably more than a match for any of these little Pickerel which have come under my observation. In shape and general proportions, the Long Island Pickerel is not dissimilar to the species last described, the head alone excepted, which, allowance being made for the difference of size, and the scaliness of the cheeks and *opercula*, is in all respects similar to that of the Great Northern Pickerel.

Its gill-covers do not materially differ from those of the Common Pickerel, except that the lower margin of the *suboperculum* is something more oblique, giving the posterior edge of the free margin rather an angular form.

The branchiostegous rays are four in number; the dorsal fin-rays, twenty-two; pectoral, sixteen; ventral, ten; anal, eighteen; and caudal, eighteen, seven above, and seven below the great rays.

Its colour is olive green, darker on the back, and fading into greenish yellow on the sides, irregularly barred with transverse waving bands of dusky brown, whence its designation of *Fasciatus*. The fins are brownish green, generally, without spots or bars; the pectorals and ventrals the palest, and bordered with dingy yellow.

Before closing this article, I would mention a very remarkable specimen of this fish, which was kindly sent to me by my friend, Mr. William Pennington, of Newark, who perceived that it was

a fish of unusual character, and knowing that I was engaged in this work, took some pains to procure me a sight of it.

This individual was caught in a net in the salt water, in the lower part of Newark Bay, and, at first sight, I was inclined to believe it a nondescript species.

It weighed something over a pound and a half, was unusually thick in proportion to its depth, and was in the finest condition. Its colour, however, was the most remarkable; for the back and sides, down to the lateral line, were of the richest and most lustrous copper colour, paling on the sides into bright brazen yellow, with the belly of a silvery whiteness. The cheeks, gill-covers, and fins, all partook of the same coppery hue, and the whole fish was far more lucent and metallic than any of the family I had before seen. There was not the slightest indication of any transverse bars or of any mottling; nor was there any of that sea-green colour which is so peculiar to the Pike family.

On a minute examination, however, of its characteristics, and especially by the size of its scales, I was perfectly satisfied that it was neither more nor less than an individual Long Island Pickerel (*Esox Fasciatus*), which, having wandered into salt waters, had thus entirely changed its colours, and grown to a weight exceeding its natural average, in the ratio of at least three to one, probably from the superiority and greater abundance of food which he found in his new hunting grounds.

I did not myself taste the fish, but was informed that it was of very unusual excellence.

I never saw a more striking instance of the effect which different waters have upon the colouring and condition of fishes,

than in this Pickerel; nothing was left unchanged except those specific characters on which alone permanent distinctions can be founded; and without a knowledge of which the quickest observation is useless, so far as assigning their places to any of the animal kingdom.

In addition to the four species above described, there are laid down in the books three others, besides the hideous Garpike, or Alligator Gar (*Esox Osseus*), of the West.

These are the *Esox Niger*, *Esox Phaleratus*, and *Esox Vittatus*, of the western waters, all which are so closely allied, and so closely similar in habit, that there is no object in occupying space in their description, the rather as they are well known, and not liable to be mistaken for others of the same family.

ANGUILLIDÆ.

THE EEL.

Anguilla—Auctorum.

Although I in no respect regard the Eel as worthy of the notice of the angler, a volume on fish and fishing would be incomplete, had it not some allusion to this singular fish, which is, moreover, very excellent on the table.

The family to which it belongs is of a different order from any which have been enumerated, that of the *Apodal Malacopterygii*, or soft-finned fishes, destitute of ventrals. They have slender and elongated bodies, without apparent scales,

these being deeply imbedded in mucous skin. Gill-covers they have none, the gill-openings are small, before, and rather below the origin of the pectoral fins. The dorsal fin extends above two-thirds, and the anal above one-half the length of the whole fish, both united at the end, and forming a tail. The lateral line exhibits a series of mucous orifices.

The general colour is hair-brown, varying to glossy bluish green, above, and coppery yellow varying to silver white below, according to the purity and brightness of the waters which they inhabit.

They may be taken with a hook and angle-worm, but it is a nasty slimy business, and affords no sport to compensate the disagreeable nature of the labour. The Eel-spear, the set-line, or the Eel-pot, is the true mode of taking them, and their true place is not in the creel of the genuine angler, but on the board of the elaborate epicure, *en matelotte*, or *à la tartare*, according to individual preference.

With this fish, our list of the soft-rayed species is brought to a close, and I shall now proceed to the *Acanthopterygii*, or spiny-finned fishes, among which are several of our finest species, both of fresh and salt water, both for sport in the water, and excellence on the table.

PERCIDÆ.

THE AMERICAN YELLOW PERCH.

Perca Flavescens—Mitchil.

Yellow Perch.

This is a very common fish, widely diffused, with small variation of size, shape, form and colour, through all the inland fresh waters of the whole United States, ranging through all the lakes and rivers of the country from the eastern part of Maine to the waters of the Ohio, into which it has gained access through the Ohio Canal, and whence it will undoubtedly ere long make its way into the Mississippi. There are several subordinate varieties of this fish, which differ in size, colour, and slightly also in the number of fin-rays, in different waters, and these have been created into distinct species, under the titles of the Rough Yellow Perch (*Perca Cerrato-Granulata*);

the Rough-headed Yellow Perch (*Perca Granulata*); the Sharp-nosed Yellow Perch (*Perca Acuta*); the Slender Yellow Perch (*Perca Gracilis*); and the White Perch (*Perca Pallida*). It does not, however, appear that these distinctions are sufficiently broad or permanent to justify this arrangement; and it is now generally held that there is but one species of true fresh-water Perch in the United States, and that the forms which have been designated under the above titles are mere accidental varieties, similar to those which have been previously noticed of the Common Trout. Originally the Yellow Perch was a northern fish, its range extending to about the fiftieth parallel, but it has lately, like several others of the same species, been much more widely diffused through artificial channels, as, for instance, the Black Bass (*Grystes Nigricans*), and the Rock Bass, (*Centrarchus Æneas*), which have descended from the basin of the St. Lawrence, by the Erie and Whitehall canals, into the waters of the Upper Hudson.

The Yellow Perch is a bold biter, and a tolerably good fish on the table; it frequents the same waters with the Pickerel, from the assaults of which it is defended by the sharp spinous rays of its dorsal fin.

In colour, its sides are yellow, varying in intensity from greenish to bright golden in different waters, and occasionally in tide waters to pale greenish white. Its back is banded with six or eight dark vertical bars. Its pectorals, ventrals, and anal are golden orange—its dorsal and caudal greenish brown.

Its body is compressed, elongated, with a slightly gibbous dorsal outline. The scales are small; the head, above the eyes and between them, smooth; lateral line concurrent with the

line of the back. Head sub-depressed, and in larger and older fish the rostrum is produced, causing a hollow in the facial outline. The first dorsal commences above the pectorals, the first ray much shorter than the second, the fourth, fifth, and sixth rays are the longest, and the last the shortest—it has in all thirteen rays. The second dorsal has seventeen rays, the the two first spinous. The pectorals have fifteen soft rays; the ventrals have one spinous and five soft rays; the anal, two spinous and eight soft; the caudal is forked, with rounded tips.

The mouth is of moderate size; *pre-operculum* strongly toothed; the *operculum* serrated beneath, with a spine on its posterior angle. The irides are golden yellow—the pupils black.

It varies in weight in different waters, from a few ounces to four or five pounds. It is a bold, hardy fish—is easily transported from one water to another, and appears to thrive equally well on all soils.

It is taken with the worm or small fish, used either as a live or dead bait, and affords very fair sport, pulling strongly on the line for a few minutes, but by no means requiring the same degree of skill to effect its capture. It is the favourite fish of rural anglers, where Pickerel do not abound, and is esteemed a great delicacy where sea-fish cannot be obtained.

THE STRIPED SEA BASS.

Rock Fish, Bar Fish—Richardson. *Labrax lineatus*—Cuvier.

This noble fish, which, after the Salmon family, is unquestionably the most sporting fish of this continent, has its geographical range from the Capes of the Delaware, in which river it is known as the Rock Fish, to the coasts of Massachusetts; unless, as I think almost certain, the Bar-Fish of Richardson, which is taken in the St. Lawrence, proved to be merely an accidental variety.

The Striped Bass is properly a sea fish, entering the rivers in the spring to spawn, at which time he runs as high up the courses as the depth of water will permit, and lies among the bushes where the channels are narrow. They run far up the Hudson—are taken at the foot of the Cohoes Falls of the Mohawk in great numbers, and ascend yet higher up the cold, clear waters of the Delaware.

In September and October they run along the coast in large schulls, entering the inlets, and being taken in great numbers between the outer bars and the beach by the sean. In the heaviest surfs of the Atlantic, on the outer ocean beaches, they are captured of great size with a bone or metal squid. They are a bold, ravenous, and powerful fish, biting voraciously at almost every sort of bait, from soft crabs and clams, on a drop-line, to shiners or sparlings on trolling tackle, Shad-roe in rivers frequented by that fish in the spring of the year, and even the artificial fly of large size and gaudy colours, with

which, at the end of a hundred yards of line, they afford great sport, being vigorous, fierce, and active, not succumbing until after a long and violent conflict with their captors.

In winter, when the weather becomes cold and stormy, they again enter the estuaries of rivers, and imbed themselves in the mud of the brackish bays and lagoons, which possess the advantage of being calm and undisturbed by the tempests which vex the open sea.

They attain to a very great size, even, I believe, to seventy or eighty pounds' weight, though I have never myself seen one of above forty-three; the smaller-sized fish, of seven or eight pounds, are, however, by far the most delicate, and I think those not exceeding fifteen pounds give the best sport to the angler.

In colour, the Striped Bass is bluish brown above, silvery on the sides and beneath. Along each side are from seven to nine equidistant dark parallel stripes, the upper series terminating at the base of the caudal, and the lower above the anal fin. These lines are occasionally indistinct, sometimes interrupted, and more rarely each alternately a continuous stripe, and a row of abbreviated lines or dots; this appears to be the form which Dr. Richardson has designated as the Bar-Fish of the St. Lawrence.

The body is cylindrical and tapering; head and body covered with large adhesive scales. Lateral line obvious, running through the fourth stripe, and nearly straight. Head bluntly pointed; eyes large; nostrils double; gill-openings large; lower jaw the longest; teeth numerous on the maxillaries, palatine bone and tongue; *operculum* armed with two spines on its lower margin, the *pre-operculum* finely dentated.

The first dorsal consists of nine spinous rays, of which the first and the last are shortest. A simple ray occurs between this and the second dorsal, which consists of twelve branched rays. The pectoral fins have sixteen rays; the ventrals, one spinous and five soft rays; the anal, three spinous and eleven soft; the caudal, which is broadly lunate in shape, has seventeen branded rays.

The pupils are black, the irides silvery.

Altogether it is one of the most beautiful, as well as the most excellent and sporting of American Game Fish, the flesh being very firm, white, and well-flavoured."

There are two other species of Bass, the *Labrax Rufus*, and *Labrax Pallidus*, or Ruddy, and little White Bass, which are better known, both to anglers and epicures, as the River Perch of New York, and White Perch. They are both taken in the brackish waters of tide rivers, and afford fair sport to the angler, as well as being a very delicate pan-fish.

Dr. Dekay also enumerates another fish of this genus, as the small Black Bass (*Labrax Nigricans*), which he describes as being found in various ponds of Queen's and Suffolk counties, Long Island, rarely attaining to two pounds in weight, being esteemed very good eating, and rising freely to the fly.

I have never myself seen this fish, but have great doubts whether it is more than a casual variety of the Black Bass of the St. Lawrence, the *Centrarchus Fasciatus* of Dekay, the *Huro Nigricans* of Cuvier and Richardson, and more properly the *Grystes Nigricans* of Agassiz; for although this is improperly

distinguished into two fishes by Dr. Dekay, it is in fact but one. I have never heard, it is true, of the existence of the St. Lawrence Bass in the waters of the State of New York south of Champlain, prior to the opening of the canals, but there is no doubt that, like the Perch, it might easily be transported from one to another locality by artificial means.

There is yet another variety, the White Lake Bass (*Labrax Albidus*), which is taken readily with the hook in Lake Erie, and known at Buffalo, where it is much esteemed as an article of food, as the White Bass.

None of these are, however, sufficiently important to merit more particular notice.

THE YELLOW PIKE PERCH.

AMERICAN SANDRE.

Lucioperca Americana—Cuvier.

THE OHIO PIKE, GLASS EYE, YELLOW PIKE, OHIO SALMON.

This bold and voracious fish I have never seen, though it is abundant from the western part of the State of New York to the waters of the Ohio, the great lakes and rivers of the fur countries, up to the fifty-eighth parallel of latitude. It affords great sport to the angler, being readily taken with the hook, with almost any live or dead fish bait, though it is said to prefer the common fresh-water Cray-fish (*Astacus Bartoni*), according to Dr. Dekay, whose account of this fish I have taken the liberty of borrowing from his "Fauna of New York:"

"The best time for fishing is in the dusk of the evening, with a great length of line, keeping the bait in gentle motion. The foot of rapids or beneath milldams appears to be its favourite haunts. In the heat of summer it seeks the deepest parts of lakes, or in streams the coolest places under weeds or grass. It is esteemed one of the most valuable fishes of the western waters, in which it greatly abounds, and sells readily for a high price. It spawns in Lake Huron in April or May, and has been taken of the length of thirty inches.

"Its colour is yellowish olive above the lateral line; lighter on the sides; silvery beneath. Head and gill-covers mottled with green, brownish, and white. Chin pale flesh colour.

Pupil dark and vitreous; irides mottled with black, and yellowish. Membrane of the spinous dorsal fin transparent, with a few dark dashes; the upper part of the membrane tipped with black. Soft dorsal fin light yellowish, spotted with brown in irregular longitudinal bars. Ventral fins transparent yellowish; pectoral fins yellowish olive, with brownish bars. Anal fin transparent yellowish, with a broad whitish margin; caudal fin with irregular dusky bars.

"The body is elongated, cylindrical, and tapering. Scales of moderate size; lateral line straight from the upper edge of the gill-covers to the tail. *Pre-operculum* serrated with a series of distant spines. *Opercle* with one slender flat terrinal spine, beyond which is a pointed membrane. *Branchial* rays, seven. Mouth wide, extensible; the lower jaws received into the upper. A series of acute recurved teeth in both jaws, and on the vomer and palatines. Two very long and conspicuous teeth, resembling canines, in front of each jaw; those of the lower received into cavities above. Teeth on the vomer minute. Tongue smooth, pointed, free. The first dorsal fin is composed of thirteen or fourteen long slender spinous rays; the second dorsal has one short, simple, subspinous ray, and twenty-one soft rays; the pectorals have fourteen soft rays; the ventrals one stout spine and five branched rays; the anal one spine and fourteen rays; the caudal is deeply furcate, and has seventeen distinct, beside many accessory, rays."

This fish is a true Perch, though its form, elongated mouth, and fiercely predatory habits suggest the idea of a Pike, whence Dr. Dekay has given it the appellation of Pike-Perch, which is a translation of its classical name, in preference to the name

Sandre, which belongs to the Canadian fish of the same species, and to the analogous European fishes.

The Grey Perch (*Lucioperca Grisea*) would seem to be a permanent variety of the above, if not a distinct species; it differs from it in size, never exceeding ten or twelve inches, in colour and several other important particulars. It is found in the same waters with the preceding species, and is equally prized as an article of food.

Richardson's Pike-Perch, the Canadian Sandre (*Lucioperca Canadensis*), is another small distinct species found in the River St. Lawrence. Its principal characteristic difference lies in the fact that the *operculum* has five acute spines on the lower margin. In colour it is dark olive, green above, and whitish beneath with a few pale yellow spots on the sides below the lateral line. It does not exceed fourteen inches in length. It is, like the others of its species, esteemed an excellent fish on the table, and, being a free biter and hard puller, affords good sport to the angler. It is not, however, of so great importance that I care to enter into a more minute description.

THE BLACK BASS OF THE ST. LAWRENCE.

Huro Nigricans—Cuvier. *Centrarchus Fasciatus*—Dekay. *Grystes Nigricans*—Agassiz.

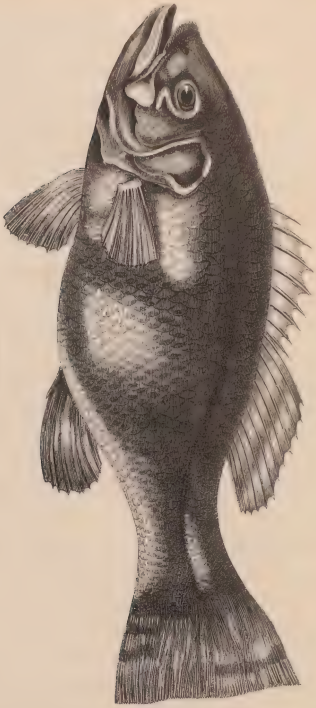
This is one of the finest of the American fresh-water fishes; it is surpassed by none in boldness of biting, in fierce and violent resistance when hooked, and by a very few only in excellence upon the board.

Peculiar originally to the basin of the St. Lawrence, in which it abounds from the Falls of Niagara downward, if not through its whole course, it has made its way into the waters of the Upper Hudson, through the canals. It is said by Dr. Dekay to be found generally in the small lakes of the state of New York, but I conclude that this must be limited to those which communicate with the great lakes or the St. Lawrence. It is taken abundantly in Lake Champlain, but it is in the swift glancing waters of the St. Lawrence, among the exquisite scenery of the Thousand Islands, that it affords the greatest sport to the angler.

It bites ravenously at a small fish or spinning-tackle, or at the deadly and murderous spoon, an instrument so certainly destructive that the use of it is properly discouraged by all true anglers as poaching and unsportsmanlike.

The finest sport can be had, however, with a long light Salmon-line, treble-twisted gut, to defy its numerous and exceedingly acute teeth, and a large fly, with a body of scarlet chenil and four wings, two of the silver pheasant and two of the scarlet

ibis. As the Black Bass attains to the weight of six or eight



The Black Bass.

pounds, and is excelled in vigour, speed, and agility only by the

Brook Trout, the Salmon Trout, and the true Salmon, the sport which he affords when thus hooked can be very readily imagined; nor can he be brought to the basket by anything short of the best tackle, and the most delicate and masterly manipulation.

In colour, this fish is of a dusky bluish black, sometimes with bronze reflections, the under parts bluish white, the cheeks and gill-covers nacrous, of a bluish colour.

The body is compressed. Back arched and gibbous. Profile descending obliquely to the rostrum, which is moderately prolonged. Scales large, truncated. Scales on the *operculum* large; a single series on the *sub-operculum*, much smaller on the *pre-operculum*, ascending high up on the membrane of the soft dorsal and caudal fins. Eyes large; nostrils double. *Operculum* pointed, with a loose membrane. The lower jaw is somewhat longest. The jaws are smooth and scaleless. Both jaws are armed with a broad patch of minute conic acute recurved teeth. An oblong patch of rasp-like teeth on the vomer, and a band of the same kind on the palatines. Branchial arches minutely toothed. Pharyngeal teeth in rounded patches.

The dorsal fin is composed of nine stout spines; the second dorsal of one spine and fourteen soft rays. The pectorals have eighteen soft rays; the ventrals, one spine and five soft rays; the anals, three spines and twelve soft rays; and the caudal, sixteen soft rays.

It is somewhat doubtful to me whether the fish known in the waters of Lake Erie, and those generally above the Falls, as the Oswego Bass, is not distinct from this fish, though it is also occasionally called Black Bass. There is very evidently

some confusion about the matter, as I am well assured that another fish of the same family, the *Corvina Oscula*, is at times confounded with it, and called by the same name, though in truth it but slightly resembles it. Another fish of the same family is the Growler.

THE GROWLER.

Grystes Salmonides—Auctorum. The White Salmon—Smith's History of Virginia. The Trout—Carolina Provincialism.

This fish, in general form, closely corresponds with that last described. It has the same gibbous back, with the lateral line following the dorsal curve, and the same protruded lower jaw. Its teeth are minutely in broad bands or patches. The *operculum* has two moderate points.

Its colour is deep greenish brown, with a bluish black spot on the point of the *operculum*. When young it has twenty-five or thirty longitudinal brownish bands, which become effaced by age.

The first dorsal fin has ten spines; the second, thirteen or fourteen soft rays; the pectorals, sixteen soft rays; the ventrals, one spine and five soft rays; the anal three spines and eleven or twelve soft rays; the caudal fin, which is slightly lunate, has seventeen soft rays.

There may, perhaps, be two distinct varieties of this fish. It has been taken in the waters of western New York, in the Wabash in Indiana, and abundantly in Carolina, where it attains to the length of two feet, and is considered an excellent fish, passing, as well as another fish of the same family, the Carolina Weak Fish (*Otolithus Carolinensis*), under the misnomer of Trout. I am inclined to believe that this fish is also known as the Welchman in the inland waters of North Carolina.

Before passing on to the next species I will observe that I

consider the proper classical name of the Black Bass of the St. Lawrence, decidedly to be *Grystes*—the genus *Huro* not having been by any means satisfactorily defined, while that of *Centrarchus* is distinguished by having many spinous rays to the ventral fin; while the genus *Grystes* has but three, *Perca* two, and *Lucioperca* only one—this affording a broad and clear distinction.

THE ROCK BASS.

FRESH WATER BASS.

Centrarchus Æneus—CUVIER.

THIS is another delicate and game fish, which, originally peculiar to the basin of the St. Lawrence, has made its way through the canals into the upper waters of the Hudson and the anastomosing streams. It is abundant in the great lakes, and Lake Champlain.

It, like the Black Bass, is a bold biter, taking a small fish dead or alive very freely, but preferring to all other baits the Cray-fish (*Astacus Bartoni*).

The general colour of this fish is a dark coppery bronze above, with green reflections; the head above dark green; gill-covers metallic green, with a dark spot on the posterior margin of the *operculum*. The sides golden copper, with several rows of oblong dark spots below the lateral line. The fins bluish green.

The body is compressed, short and broad. The dorsal outline gibbous; the lateral line following the curve of the back. Head large, with a concave outline. Gill-covers scaly; the *operculum* with rudiments of a double angle on the posterior margin; lower jaw somewhat the longest. Teeth small, conical, recurved, on the maxillaries, intermaxillaries, vomer, palatines, and pharyngeals.

The dorsal fin has eleven spinous and twelve soft rays; the pectorals, fourteen rays; the ventrals, one weak spine and five

branched rays; the anal, six spinous and eleven soft rays; the caudal with rounded tips has seventeen rays.

The Rock Bass is excellent eating, and gives good sport to the angler, though it never attains to the size of the Black Bass, rarely exceeding a pound or a pound and a half, and consequently being far less difficult to take.

This fish, as well as the Black Bass and others of the family, might be transplanted with great ease into inland waters; and as they are hardy, and defended from all enemies by their sharp and spiny fins, would be sure to thrive, and would prove delicious additions to our lacustrine species of fishes.

THE COMMON POND FISH.

FRESH-WATER SUN FISH.

Pomotis Vulgaris—CUVIER.

Fresh-water Sun Fish.

THIS beautiful little fish has gained its provincial name from the extreme brilliancy of its colours when disporting itself in the sunshine. The numerous spots on its body have procured for it the absurd name of *Pumpkin-seed* in many States, and in Massachusetts it is known as *Bream*. It is valueless as an article of food, and equally so as a bait fish, its acute spines deterring any fish from seizing it. It is, however, a constant object of pursuit to boy and lady anglers.

It has very many varieties, and a wide geographical range, being found from Lake Huron, through all the Eastern States, and along the Atlantic coast so far south as Carolina.

Its colour is greenish olive above, with irregular points of red and broader yellow or reddish brown spots disposed in very irregular lines. Ranges of brighter spots on the bluish

operculum, and on the hinder prolongation of the *operculum* a black spot with a bright scarlet margin.

Its body is much compressed, very broad, oval. Scales large and even. Forehead sloping to the snout. Lateral line concurrent with the back. Eyes large, circular near the facial outline. Nostrils double; mouth small, with very minute thick-set teeth on the maxillaries, palatines and vomer.

Its dorsal fin has ten spinous, and twelve soft rays; pectorals, twelve soft; ventrals, one spine and five soft rays; anal, three spinous and five soft; caudal, seventeen soft rays.

There is another well-defined species, the Black-eared Pond-fish (*Pomotis Appendix*), which is distinguished by a large lobe-like black prolongation of the upper posterior angle of the *operculum*.

THE LAKE SHEEP'S-HEAD.

Corvina Oscula—Cuvier.

This is a very common fish in Lake Erie, and also below the Falls of Niagara, where it is readily taken with the hook, though it is in very small repute for its edible qualities, being commonly reported to be dry, lean, and tasteless. It is in fact very rarely eaten.

Its colour is bluish grey on the back, darker on the abdomen and the snout. Abdomen and chin greyish white.

In shape it considerably resembles the preceding genera, *Grystes* and *Centrarchus*, having a gibbous dorsal outline, and arched profile, the lateral line being also, as in these, concurrent with the curve of the back. The eyes are large, round and prominent, situated close to the facial outline. The teeth in the jaws are small, conic, and sharp, but the palate and pharyngeals are paved with large rounded solid teeth, well adapted for crushing its hard and shelly prey, such as the fresh-water clams and muscles, cyclas and paludina, which constitute its principal subsistence.

The dorsal fin has nine spinous rays; the second dorsal, one spinous and twenty-eight soft rays; the pectorals, nineteen soft rays; the ventrals, one spinous and five soft; the anal, two spinous and eight soft; the caudal, seventeen rays. Its air-bladder is very large and simple.

This fish, if I am not greatly in error, is very frequently

confounded on the lakes in the vicinity of Buffalo with the *Grystes Nigricans*, under the name of Oswego Bass, and in fact, though of a different family (*Scienidæ*), does bear something of general resemblance to that species. It is also found in many of the small inland lakes throughout the country.

THE MALASHEGANAY.

Corvina Richardsoni—Cuvier.

This, like the species last named, is an inhabitant of the upper lakes, though it is not found below Lake Erie. In Lake Huron it is known as the *Sheep's-head*, and in the vicinity of Buffalo as the *Black Sheep's-head*.

It affords very good sport to the angler, and, unlike its congener last described, is highly prized as one of the most delicious of the lake fishes.

Its colour is greenish grey, banded with dusky or blackish bars over the back, its sides are silvery, its belly yellowish. In form it closely resembles the *Corvina Oscula*, but its forehead descends in a more vertical angle to the mouth. The under jaw is somewhat the longer. The mouth is cleft back as far as to the middle of the eye, which is large and round. The teeth are very numerous and very small. The *operculum* has two lobes behind.

The first dorsal fin has nine spinous rays; the second, one spine and eighteen soft rays; the pectorals have fifteen soft rays; the ventrals, one spine and seven soft rays; the anal, one spine and seven soft rays; the caudal, seventeen soft branched rays.

There is yet another species of this family, the *Corvina Grisea*, known familiarly as the White Perch of the Ohio, which is found in the waters of that noble river, but it is of little importance either to the angler or the epicure, and merits not a more particular description.

With this fish ends the list of those fresh-water fishes of the United States and British Provinces, which by the most liberal courtesy may be called game or sporting fishes.

Hence I proceed to the shoal-water sea-fishes of the same division, *Acanthopterygii*, and thence, and lastly, to the deep-sea fish of the order *Sub-brachial Malacopterygii*.

SHOAL-WATER FISHES.

Having now come to the conclusion of that, by far the most important, portion of my subject which relates to the fresh-water fishes, including those anadromous or migratory species which, although they make their abode during a part of the year at least in salt water, are taken in sporting style in rivers and estuaries only, I shall proceed to devote a few pages only to these sea-fish; all of the division *Acanthopterygii*, and all of five families, *Percidæ*, *Scienidæ*, *Sparidæ*, *Scombridæ*, and *Labridæ*, which are taken in shoal waters at the mouths of large rivers, in bays and estuaries, and which not only afford much sport to the angler at particular seasons of the year, but furnish a delicious article of food.

These are the Sea Bass, or Black Sea Bass (*Centropristes Nigricans*).

The Lafayette (*Leiostomus Obliquus*).

The Weak Fish (*Otolithus Regalis*).

The King Fish (*Umbrina Nebulosa*).

The Silvery Corvina (*Corvina Argyroleuca*).

The Branded Corvina (*Corvina Ocellata*).

The Big Drum (*Pogonias Chromis*).

The Sheep's-head (*Sargus Ovis*).

The Porgee (*Pagrus Argyrops*).

The Blue Fish (*Temnodon Saltator*).

The Tautog—Black Fish (*Tautoga Americana*).

PERCIDÆ.

THE SEA BASS.

BLACK SEA BASS.

Centropristes Nigricans—Cuvier.

This is an excellent fish, and a very general favourite on the table. It is with us a summer fish of passage, in the Northern States I mean, appearing on the coasts of New York during the months of May, June, and July, in which it is frequent in the markets, and readily taken with the baited hook.

Its geographical range is very wide, extending from the coasts of Florida to Cape Cod, on the shores of Massachusetts; abundant in the vicinity of Martha's Vineyard, it is rare in Boston Bay. Properly a southern species, though it visits the waters of the Eastern States in summer, it invariably returns to the eastward in autumn.

With the wonted stupid perversity of their order, the fishermen of our coasts have confounded it, by means of absurd misnomers, with two entirely different species, the Blue Fish (*Temnodon Saltator*), and the Black Fish or Tautog (*Tautoga Americana*), calling it commonly by both these appellations.

The colour of the Sea Bass is a general blue-black, sometimes

more or less slightly bronzed, the edges of every scale are much darker than the prevailing colour, which gives the character of a black net-work on a bluish ground to the whole surface of the fish. The fins, excepting the pectoral, are pale blue; the dorsal and anal more and less distinctly spotted with a darker shade of the same colour.

The body is oblong and compressed; the scales are of an oblong form, covering the *opercula* and extending high up on the dorsal; the *pre-operculum* is distinctly toothed along its entire margin, the *operculum* has a large spine on it, and another above; the teeth are like velvet pile on all the bones, those on the outer edges of the jaws the largest.

The dorsal fin has ten low spinous, and eleven much more elevated soft rays; the pectorals have eighteen soft rays; the ventrals, one spine and five soft rays; the anal, three spines and seven soft rays; the caudal, trilobed, consisting of eighteen soft rays.

This fine fish is known by a great number of provincial titles; among others, Dr. Dekay mentions the trivial names of *Black Harry* and *Hanahills*.

It is a bold and free biter, and is one of the principal objects of pursuit by those who join in steamboat excursions to what are called the sea banks, off the port of New York, in the process of which they are often taken in considerable numbers.

SCIENIDÆ.

THE LAFAYETTE.

SEA CHUB.

Leiostomus Obliquus—Lacépède.

This is a beautiful and exquisitely-flavoured little fish, which properly belongs to the southern waters, being very common on the coasts of Florida, where it is much prized both as a sporting fish and as a delicacy.

New York is probably its northern limit, and in the New York waters it is a rare visitant, though it appears at times in extraordinary abundance.

One of the seasons of its most remarkable frequency happening to be simultaneous with the visit of Lafayette to America, it thus obtained its common name by general consent, it never having been observed previous to that date, and so taken for a new fish, though it had in truth been defined long before by Dr. Mitchil, who designated it *Mugil Obliquus*.

Its colour is greyish white, with fifteen or sixteen darker grey bars, more or less, pointing obliquely forward, those nearer the tail more vertical; pupils black, irides yellow, fins pale yellow, the dorsal and anal finely spotted with black. There is a round spot of dark brown on the lateral line above the pectorals.

The first dorsal fin has nine spinous rays, and is triangular in shape, its fourth and fifth rays being the largest; the second dorsal has one spine and thirty soft rays; the pectorals, twenty —the ventrals, fifteen soft rays; the anal has two spines and twelve soft rays; the caudal has nineteen branched and articulated rays.

There is a variety of this fish (*Leiostomus Xanthurus*) peculiar to South Carolina, which has no spots or bands, but has all the fins, and more especially the caudal, yellow.

THE WEAK FISH.

WHEAT FISH.—SQUETEAQUE.—CHECOUTS.

Otolithus Regalis—Cuvier.

The trivial name of this fine fish has never been very distinctly explained, some ascribing the title "Weak" to the delicacy of the mouth, which when hooked often tears away from the barb; others to the briefness of its resistance after being struck, though at first it pulls strongly.

Yet a third explanation is, that Weak is a corruption from "Wheat," because it comes into season when the wheat is ripe; this, however, is not the fact, as it is an early spring fish, though taken through the summer months abundantly in the waters of New York; probably both names, Wheat and Weak, are really corruptions from the Narragansett appellation by which it was first known to the English settlers, *Squeteaque*.

Its geographical range is very wide, extending from New Orleans and the mouth of the Mississippi, where it is styled "Trout," to the estuary and Gulf of the St. Lawrence. It has also, it is said, been taken at Martinique.

It is less common in the New York waters than formerly, being savagely hunted by its deadly enemy, the Blue Fish (*Temnodon Saltator*), which has lamentably thinned its numbers. Still it exists in sufficient numbers to give very exciting sport to the shoal salt-water angler, and when quite fresh out of the water is a very exquisite fish, its flavour greatly resembling that

of the Trout, whence probably its southern misnomer. When it has been taken three or four hours it becomes flaccid, insipid, and in fact utterly worthless.

Its colour is bluish grey above, with irregular lines of transverse spots on the back and sides; the head is greenish blue, the irides are yellow, the gill-covers and belly silvery and nacrous, the chin Salmon-coloured, dorsal and caudal fins brown, pectorals pale brownish yellow, ventrals and anal orange.

The body is long, slender, and compressed; head convex above the eyes, the scales moderate-sized, oval, covering the head and gill-covers; the lateral line is slightly-curved; the eyes large; maxillaries, intermaxillaries, and pharyngeals minutely toothed.

The first dorsal fin is triangular, and longer than it is high, of eight weak spines; between this and the second dorsal is a single weak spine. The second dorsal has twenty-eight soft rays, the pectorals have eighteen soft rays; the ventrals, one spine and five soft rays; the anal, thirteen; and the caudal, seventeen rays.

Of this fish there are two distinct varieties, the *Otolithus Carolinensis*, also misnamed Trout, which is bluer on the back than the Common Weak Fish, and is spotted rather than striated; and the *Otolithus Drummondi*, a smaller species found at New Orleans.

The Common Weak Fish is taken with the hook and reel of all sizes, from a few ounces up to seven or eight pounds, and it is positively asserted even up to thirty, but I have never seen a specimen approaching to such dimensions.

THE KING FISH.

BERMUDA WHITING.

Umbrina Alburnus. Umbrina Nebulosa—Agassiz.

This admirable fish, which was formerly very abundant in the waters of New York and its vicinity, very few ever wandering so far as to Boston, is becoming daily less frequent. On the coasts of Carolina and Florida, where it is still taken in vast numbers, it is known absurdly as the Whiting, a fish to which it bears no resemblance.

It is perhaps the gamest of all the shoal salt-water fishes, and the angler regards the King Fish in his basket much as the sportsman looks upon the Woodcock in his bag—as worth a dozen of the more easily captured and less worthy fry.

His colours on the back and side are dark bluish grey, with lustrous and silvery reflections, and bright many-coloured nacrous gleams flitting over him as he dies. His irides are yellow; his dorsals, caudal, and pectorals are dusky olive brown, the former the deepest; the ventrals and anals pale yellow. There are several dark oblique bands on the back, broken toward the tail, and a dark horizontal stripe, more or less distinct, from the pectorals to the tail.

The body is long, cylindrical, and slender; the scales round, the lateral line parallel to the back; the snout is long but blunt; the *operculum* has two strong flat spines; the *pre-operculum* is serrated behind; the branchiostegous rays are seven; the

teeth of the upper jaw are long, sharp, and rare, in the lower even and crowded.

First dorsal fin is triangular, with ten spinous rays; the second dorsal has one spinous and twenty-five soft rays; the pectorals, thirteen soft rays; the ventrals, one spine and five soft rays; the caudal fin has seventeen rays, and has its upper lobe acute, but its lower rounded.

There is said to be a permanent variety of this fish, *Umbrina Coroides*, peculiar to South Carolina, which has two spines to the anal fin, and is marked with nine dark vertical bands on the back.

THE SILVERY CORVINA.

CORVINA ARGYROLEUCA.—SILVERY PERCH.

Bodianus Argyroleucos—MITCHILL.

THIS fish, which greatly resembles the Perch, both in shape and habits, is well known to the fishermen of New York as the *Silvery Perch*. It is properly a native of the Caribbean Sea and Gulf of Mexico, but ranges during the summer so far north as the waters of New York.

It is a free-biter, and a moderately good fish.

It is of a lustrous silvery white on the upper parts of the body, and opaque white below. Its dorsals, pectorals, and caudal are pale yellow; its ventrals and anals, orange yellow.

Its body is compressed, its dorsal outline arched and gibbous, its lateral line concurrent with the back; eyes large; mouth deeply cut; teeth small, and disposed in bands; the *pre-operculum* has two small spines, and a serrated margin; the *operculum* terminates in two flat spines.

The first dorsal fin has eleven spines; the second dorsal, two spines and twenty-two soft rays; the pectorals, seventeen soft rays; the ventrals, one spine and five soft rays; the anal, two spines and nine soft rays; the caudal, is slightly rounded, and has seventeen soft rays.

THE BRANDED CORVINA.

Corvina Ocellata—Cuvier.

This is a beautiful species, very rare at the north, but is abundant to the southward. It is as excellent as it is handsome, and my southern readers will recognise it as the *Poisson Rouge*, or Red-fish of New Orleans, and as the Sea Bass or Red Bass of Charleston. Like the rest of its family, it is a bold biter and a vigorous fish, and is considered superlative on the table.

In colour it is blue above, lighter below, with head, cheeks, and shoulders of a deep golden yellow, with ruddy metallic reflections. Its dorsal fin is dark green; pectorals, ventrals, and anal dull red. At the base of the tail it has one, and sometimes two dark brown confluent spots. To these its name of Branded has been ascribed by Dr. Mitchil, as if the marks resembled the brand left by a heated iron.

The body of this Corvina is more cylindrical, less compressed, and shallower than in any of its family. The snout is blunt but prominent. Lateral line concurrent with the dorsal outline. The teeth in one band in both jaws. The *pre-operculum* is serrated or toothed along the whole margin; the *operculum* terminates posteriorly in two blunt spines.

The first dorsal fin has ten spines; the second, one spine and twenty-six soft rays; the pectorals have seventeen soft rays; the ventrals, one spine and five soft rays; the anal, two spines and eight soft rays; and the caudal, which is nearly

even, but slightly hollowed out in the centre, has seventeen branched rays.

It is found in the southern seas from eight inches to three feet in length, and in those waters is one of the most favourite objects of pursuit to the salt-water angler.

THE BIG DRUM.

Pogonias Chromis—Cuvier.

AND

THE BANDED DRUM.

Pogonias Fasciatus—Lacépède.

Both of these fish are so constantly and commonly taken by the bait fisher in shoal salt-water that it would hardly be proper to omit all mention of them in a work of this nature, although except the great size and difficulty of landing the former, and the rapid biting of the latter variety—if they be indeed distinct species, which I think Dr. Dekay has satisfactorily established them to be—they have little or nothing to recommend them.

The geographical range of both these fishes is from Florida to New York, their northern and southern limits being identical.

They have both deep compressed bodies, large eyes, lateral lines parallel to the dorsal outline, numerous teeth in card-like bands on the jaws, and the pharyngeals furnished with large hard grinders.

They have both double dorsals, the former with nine, the latter with ten spines in the first—both with one spine and twenty-two soft rays in the second. Pectorals, respectively, eighteen and twenty; ventrals of both, one spine and five soft rays; anals, respectively, two spines, seven soft rays, and two spines, five soft rays; caudals, seventeen, and fifteen branched rays.

The large fish is of a brownish bronze colour, rather lighter below, with a strongly marked spot behind the pectorals; scales silvery at the outer edges.

The smaller fish is nearly of the same colour, chocolate brown, or bronze intermixed with silver, but marked with four dusky bands, one coming down to the pectorals, the second crossing the first dorsal, and the last two crossing the second dorsal. The pectoral fins are yellowish, the others dusky brown.

The smaller fish has been by some persons supposed to be the young of the larger species; but this is, in my opinion, satisfactorily controverted by Dr. Dekay, who has seen them in September six inches long, with all the characteristics of the adult.

It is known by various popular names, as the Grunter, Young Drum, and Young Sheep's-head, but is a fish of very small estimation.

The larger species is rarely taken of less than three feet in length, and fifteen or eighteen inches in depth; they weigh from twenty to eighty pounds, and although the large fish are very coarse, the young are considered by some persons delicate eating. They rarely go north of New York, but very rarely visit the coasts of Massachusetts.

SPARIDÆ.

THE SHEEP'S-HEAD.

Sargus Ovis—Auctorum.

This fine and delicate fish must on no account be confounded with the fresh-water *Corvinæ*, two of which pass by the same synonyme in the vernacular, and are peculiar to the great lakes. This is, on the contrary, a purely salt-water species, never ascending rivers, although it enters all the shallow bays on the coast, so far as Cape Cod. It is a southern fish in its natural state, although during the heat of the summer it wanders to the northward, where it is taken along the shores from June to October. Its southern limit is the Mississippi, and the coasts of Florida and the Carolinas are its breeding-grounds.

As a delicacy, it holds "the same rank with American gastronomers," says Dr. Dekay, "that the Turbot holds in Europe. I have frequently eaten of both, under equally favourable circumstances, that is to say, within an hour after being taken out of the water, and can assert that the Sheep's-head is the more delicate and savoury fish. The Turbot, I may here state—though I have heard the contrary frequently asserted—does not occur on the shores of America."

I have quoted the above remarks for two reasons, first because I desire to register my assertion as against Dr. Dekay's, although such things are, after all, merely matters of opinion, that the Sheep's-head, though a delicious fish, is not more delicate—*savoury* neither of them are—than the Turbot, and that it is immeasurably inferior to it in lacking what constitutes the Turbot's chief excellence, the admirable gelatinous fins, which have been famous the world over from the time of Domitian and Heliogabalus, arch-epicures of old, to the palmy days of Ude and Carême.

Secondly, I beg leave to state positively, that although *the* Turbot of Europe does not exist on the shores of America, *a* Turbot,—and a very admirable fish too, as far superior to the Halibut as one fish can well be to another,—does exist, and is constantly taken on the shores of Massachusetts, although, like many other excellent species, it is strangely undervalued.

But to return to the Sheep's-head: it is a timid and wary fish, very difficult to hook, and when hooked a fierce and bold battler, exceeding difficult to land, and making a more desperate resistance than infinitely larger species. It is considered the greatest achievement of the salt-water fisherman to master this king of the seas.

It is occasionally taken up to seventeen pounds, though seven or eight pounds may be considered the average of large fish, but like many, I might say most fishes, the smaller and middle-sized run may be generally set down as the most choice.

The Sheep's-head has a deep compressed body, a head sloping abruptly to the snout, and equally so to the chin and throat. Scales large and oblong, smaller on the gill-covers and throat;

the lateral line is parallel to the dorsal outline; the *pre-operculum* is broadly rounded, the *operculum* emarginate. In front of each jaw it has several large quadrilateral cutting teeth, and inside of these, both above and below, as well as on the pharyngeals, are many series of large-paved grinders.

Its dorsal fin has twelve spinous and eleven soft rays; its pectorals, fifteen soft; ventrals, one spinous and five soft; its anal, three spinous and ten soft; and its caudal, seventeen soft rays.

In colour it is of a dull silver, with coppery gleams on the back, with five slightly arched bands of a darker colour crossing the back and tail. The irides are brown, the pupils black, girdled with a golden ring.

The fins are all deep brown or blackish; the head and forehead black, with golden green reflections; the chin marked with smutty patches, from some fancied resemblance of which to a Moorland sheep's face, its trivial name is derived.

THE BIG PORGEE.

Pagrus Argyrops—Cuvier.

This is a good and a handsome fish, and would be more valued if less common. It is a bold and free biter, and affords great sport to the salt-water angler, being, with the Sea Bass, the principal object of pursuit to those who affect steam-boat excursions to the fishing banks. Its geographical range is from Charleston southward, to Cape Cod on the north, beyond which it has been found impossible to naturalise them.

The colour of the Porgee is a deep brownish black on the head and back, with green and golden reflections, especially about the neck and sides, which are silvery, with brazen gleams. A black spot marks the upper corner of the gill-cover crossing the lateral line, and there is another of the same kind at the base of the pectoral fin. The dorsal, anal, and caudal fins are brown, the ventrals bluish, the pectorals light yellow. The body of this fish is much compressed, with a gibbous outline, nearly half as deep as it is broad; the face arched; the scales are large, and the lateral line corresponds with the curve of the back.

The jaws are largely furnished, as well as the pharyngeals, with alternating series of acute and paved teeth. The dorsal fin is compound, with one stout and twelve feeble spines, and twelve soft rays; the pectorals are unusually long, with sixteen soft rays; the ventrals have one spine and five soft; the anal, three spines and eleven soft; and the caudal, seventeen soft rays.

There are two smaller fish of the same family, one well known

to all fishermen, especially on the Long Island shores, as the Sand Porgee (*Sargus Arenosus*), and another far less common, described by Cuvier and others as the Rhomboidal Porgee (*Sargus Rhomboides*), which, though very similar to the Big Porgee, are clearly distinct.

SCOMBRIDÆ.

THE BLUE FISH.

HORSE MACKEREL.—GREEN FISH, IN VIRGINIA.—SKIPJACK, IN CAROLINA.—SNAPPING MACKEREL.

Temnodon Saltator—Cuvier.

A bold, fierce, and well-known fish this, greatly sought after, and affording fine sport to the fisherman, and right-royally good to eat when quite fresh out of the water, split in two down the back, nailed upon a shingle, and roasted before a quick fire.

It is a singularly erratic fish, sometimes swarming on the coasts, and again almost entirely disappearing. It occasionally runs far up rivers, and was taken in the Hudson, so high up as the Highlands, in great quantities in the year 1841. It appears to have been entirely unknown on the coasts of New York before the year 1810, since which it has been, on the whole, gradually on the increase, while in like proportion its victims, the Weak Fish and King Fish, appear to be dying out.

The Blue Fish is said occasionally to reach the weight of thirty-five pounds, but the average run is from three to eight. They generally frequent the coasts of New York from May until late in the autumn. Their geographical range is very wide, from

Brazil to Massachusetts on the coasts of America, from New Holland to Madagascar, and from Amboyna to Egypt.

The young fish abound in the mouths of our rivers from four to six inches in length, and even then they will take the bait with avidity.

The ordinary mode of catching this fine fish is with what is technically termed a squid, or piece of bright bone or metal, hurled out from the stern of a sailing boat, going with what is known as a "mackerel breeze" in a sea-way, and drawn rapidly home by hand.

There are many worse kinds of sport than this; the swift motion of the vessel, the dashing spray, and the rapid biting of the fish, combining to create a highly pleasurable excitement.

The colour of this fish is a light bluish grey, with deeper tints on the back, and greenish reflections on the sides, becoming silvery on the belly. The pectorals, dorsal, and caudal fins, greenish brown; the ventrals and anal, bluish white.

The body is oblong, cylindrical, compressed, and slender; the facial outline gently sloping; the scales, which cover the whole body, the head, gill-covers, and much of the fins are of moderate size and oblong oval form.

The lower jaw is longest, both maxillaries are well armed with sharp lancet-formed teeth; the palatines, vomer, and base of tongue banded with card-like patches of teeth. The operculum terminates in two indistinct flat points.

The first dorsal fin is composed of seven weak spinous rays; the second of one short and twenty-five longer flexible rays. The pectorals have seventeen soft; the ventrals, one spine and

five soft; the anals, one spine and twenty-seven soft; and the caudal, nineteen flexible rays.

Of the same family with the above are the well-known Spring Mackerel (*Scomber Vernalis*), of Mitchil, and Fall Mackerel (*Scomber Grex*), of the same author, as also the Spanish Mackerel (*Scomber Colias*), all of which species are excellent eating, and give good sport in the bays and inlets. They are, however, so common that they are rarely pursued for the sport, or taken except as an article of food and commerce. I therefore pass them without farther notice than this mere cursory mention.

LABRIDÆ.

THE TAUTOG.

THE BLACK FISH OF NEW YORK.

Tautog Americana—Dekay.

This, like all the fishes last described, is rather a general favourite among sportsmen and epicures, though I confess my own opinion to be that he is generally overrated in both capacities. As a game fish he is a dead, loggy, heavy puller on the hook, offering little resistance beyond the *vis inertiæ* and dead weight, and on the table his excellence depends mainly on the cook.

The colour of the Black Fish is indicated by his name, but varies considerably from deep dull black to glossy blue black with metallic reflections, and occasionally to dusky brown.

His body is elongated and compressed, the outlines of the back arched forward of the dorsal to the snout, straight posteriorly. The lateral line concurrent with the back. The eyes are rather small, the scales small, extending over the gill-covers, which are very large and rounded. The lips are very thick and fleshy, the teeth stout. The branchiostegous rays are five in number.

The dorsal fin has seventeen low spinous rays, and ten soft rays; the pectorals, seventeen soft; the ventrals, one spinous, five soft; the anal, three spinous and eight soft; the caudal, fourteen soft branched rays.

The Tautog ranges only from the capes of the Chesapeake to Massachusetts Bay. He is readily taken with the hook baited with crabs, clams, or other small shell-fish, from April until late in the autumn, especially in the vicinity of rocks, reefs, hulls of sunken wrecks, or old deserted docks, where he finds food in abundance. It is well to bait the ground largely for several days in advance of fishing for him.

DEEP-SEA FISHING.

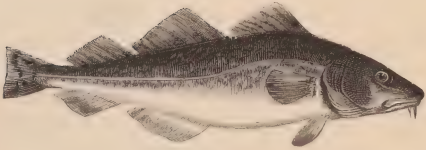
I HARDLY hold myself justified in enumerating the Cod, Haddock, Whiting, Halibut, and Flounder among Game Fishes, but as it is probable that some of my readers do regard them as such, and pursue them for the pleasure of the capture, independent of profit, I shall proceed to describe the first three briefly, and shall devote a few pages in another portion of this work to a consideration of the modes and methods of their capture.

The huge Halibut (*Hippoglossus Vulgaris*), and the Flounder (*Pleuronectes Dentatus*), I shall content myself with naming, as I cannot bring myself to regard them as fit for any but culinary purposes. In like manner the Hake, the Cusk, the Pollock, and many others of the Cod family, I shall pass in silence as objects only of casual pursuit, except to the professional fisherman, who plies his daily toil to earn his daily bread.

GADIDÆ.

THE COD.

Morrhua Vulgaris.



The Cod.

This is the common Cod of Newfoundland, well-known as an article of food the wide world over. There is an American variety, Morrhua Americana, which is slightly though permanently distinct.

The fishes of this class are distinguished from the other soft-rayed fishes by having the ventrals situate nearly vertical under the pectorals, and having two or three dorsal and anal fins.

The colour of this well-known species, which attains to a vast weight, sometimes seventy or eighty pounds, varies much in individuals. It is generally greenish brown, fading into ash-colour when the fish is dead, with many reddish yellow spots.

The belly silvery opaque white, the fins pale green, the lateral line dead white.

The body is long and cylindrical, the head sloping in an arched line, the eyes large, the scales small and adhesive. It has a cirrus or barbel at the extremity of the lower jaw. It has four rows of teeth on the upper, and one on the lower jaw.

It has three dorsal fins, respectively of fifteen, twenty-two, and nineteen rays; pectorals, nineteen rays; ventrals, six rays. Two anal fins respectively of twenty-two and nineteen rays; caudal, forty rays.

It is a bold and voracious fish, ranging from New York northwardly along all the coasts of America.

THE AMERICAN HADDOCK.

Morrhua Æglefinis—Cuvier.

The American Haddock.

The distinctive colouring of this fish is blackish brown above, and silvery grey below the lateral line, which is jet black. The back and sides are varied by purplish and golden gleams; there is a large dark vertical patch posterior to the pectorals, crossing the lateral line.

The fins are dusky blue.

The body of the Haddock is stout anteriorly, and tapering backward. The head large and arched. The eyes are large. The lower jaw is the shortest; the teeth small, in a single row on each jaw; a single small barbel on the chin.

It has three dorsals, the first and third triangular, the second longest, respectively of fifteen, twenty-two, and twenty rays. The pectorals have twenty-one; the ventrals, sixteen; the two anals, respectively, twenty-five and twenty-one; and the caudal, thirty-four rays.

The range of the Haddock is similar to that of the Cod; it is very abundant, and is about equal in estimation as an article of food with its congeners.

THE AMERICAN WHITING.

Merlangus Americanus.

The American Whiting.

This is, comparatively speaking, a rare and little-known fish, that which is commonly called *Whiting* being in reality a Hake (*Merlucius*). It ranges only from Massachusetts northward.

It is easily distinguished by its long, tapering, cylindrical body, and its high, triangular, wing-like dorsals.

Its colour is, above the lateral line, a bright nacrous bluish grey, and below a silvery white, with fins nearly of the same colour.

The head of the Whiting is acutely prolonged; the eyes large and prominent; the gill-covers rounded; the teeth sharp and small.

The three dorsals have respectively thirteen, twenty, and twenty rays; the pectorals, nineteen; the ventrals, six; the anals, respectively twenty-four and twenty-one; and the caudal, thirty-two.

The Whiting is a delicate fish. It is taken in the same manner and in the same waters with the Cod and Haddock,

and, like them, has little or no game habits. My chief reason for inserting him in this work is, that his existence in American waters has been doubted and denied.

With him ends the list of the fishes of America which come within the scope of my work, and now away to the waters and the woods, and all the calm and sweet accessories of the gentle angler's craft.

SALMON FISHING.

Of all the piscatory sports, this is the first and finest; and although it cannot now be pursued by the American angler except at the expense of some not inconsiderable time and trouble, still there is no land on earth in which it exists in such perfection as in this.

Time was, when every river eastward of the Capes of the Delaware swarmed with this noble fish, but, year after year, like the Red Indian, they have passed farther and farther from the sphere of the encroaching white man's boasted civilisation, and perhaps will also ere long be lost from the natural world of this era.

The Kennebec is now the eastern limit of the Salmon's range, and in that bright and limpid river he is yearly waxing less and less frequent.

In the Penobscot, even to this day, he abounds; but for some singular and inexplicable reason, whether it be from the sawdusty turbidness of its lower waters, or from some especial habit of the fish, it is rarely or never known to take the bait or the fly, within very many miles of the mouth of that grand and impetuous stream.

Far up the northern and northwestern branches of the river it is speared constantly by the Penobscot Indians; but the white residents of that wild region, lumbermen for the most part, and sparse agricultural settlers, are guiltless of the art of fly-fishing—the only method, by-the-way, except the use of roe-bait, whereof more anon, by which much success can be expected or obtained.

To the sportsman, that great track of grandly-timbered and superbly-watered wilderness, which yet lies virgin almost and unbroken, from within a few leagues of the ocean to the great St. Lawrence, and from the Upper Kennebec to the Aroostook and St. John's, is yet well nigh *terra incognita*.

Yet well would it repay the fisherman or the hunter, to pack his traps in the smallest compass, and set forth with rifle, shot-gun, and long Salmon-rod, viâ Augusta, Norridgewock, and the magnificent gorges of the Kennebec, for that land of the Moose, the Deer, the Trout, and the lordly Salmon, there to encamp for days or weeks, as his taste for excitement and his manly hardihood should dictate, floating by day in the birch-bark canoe over the bright transparent waters, sleeping by night on the fragrant and elastic shoots of the green hemlock, winning his food from the waters and the wilds by his own skill and daring, and earning the appetite whereby to enjoy it, by the toil which is to him a pleasure.

Such in fact is at present the only mode by which the angler can enjoy truly fine Salmon fishing, unless indeed he be a man of such liberally endowed leisure that he can fit his own yacht, and visit the estuaries of those Salmon-freighted rivers, which, from the St. John's, round all the eastern and north-

eastern shores of New Brunswick, Nova Scotia, and Prince Edward's Island, to the vast mouth of the St. Lawrence, and up that splendid river and its great northern tributaries, the Mingan and the Saguenay, as far almost as to the heights of Cape Diamond, offer the largest temptations to the adventurous angler.

Within a few years, indeed, the rivers close around Quebec, the Montmorenci, the Chaudière, and the Jacques Cartier, abounded with Salmon; and a drive of a few hours in the morning from the Plains of Abraham, set the fisherman on waters where he could confidently count on filling his creel, even to overflowing, before night-fall; but latterly these streams have failed almost entirely, and a sail of many miles down the St. Lawrence to the mouth of the Saguenay or the lordship of Mingan, has now become necessary to ensure good sport.

In the upper province of Canada, although Salmon run up the river into Lake Ontario, and frequent many of the streams falling into it from the northern shore, as the Credit and others, they are very rarely fished for or taken with the fly, and it is said confidently that in the lake itself they will not take the fly under any circumstances.

Within my own recollection, Salmon were wont to run up the Oswego, and so find their way into all the lesser lakes of the State of New York, but the dams on the river, erected, I believe, in order to the construction of the canal, have completely shut them out from these waters. I may here observe that it is very greatly to be deplored that, as is compelled by law in the Scottish and Irish Salmon rivers, a small aperture is not left in the rivers and dams, if they be above twelve feet in

height, by which the fish may ascend to the cool and gravelly head-waters, in which they deposit their spawn.

Such an aperture or run-way, which need not be of more than two or three feet square, would not occasion any material waste of water in rivers of the vast volume and rapidity which are characteristic of all the American Salmon rivers, and, therefore, would detract nothing from the utility of the works, while, by suffering this most valuable fish to ascend the course, and so to propagate its species, it would ensure to the inhabitants of the inland shores a delicious variety of food, and create anew an important article of commerce.

It is singular that the Salmon of the lakes are never known to enter the Niagara River, although they are constantly taken at its mouth. They might ascend it some sixteen or seventeen miles, to the foot of the Falls, but I believe it to be a fact that none have ever been taken within the stream.

The cause of this is probably to be found in the great depth of the Niagara River, in its abrupt and wall-like shores, and in the total absence of gravel beds, or pebbly shoals of any kind, on which they can deposit their ova.

Again, I am not aware that Salmon are ever taken in the Black River, the Rackett River, or any other of the fine streams, all abounding with the finest Brook Trout, which make their way from the romantic region of the Adirondack lakes and highlands, to the northward, into the basin of the St. Lawrence.

Everywhere to the northward of the great Canadian river, to the extreme Arctic regions, the Salmon is found in vast numbers, and, together with the White Fish or Attihawmeg, the delicious Arctic Grayling, Back's Charr, and the Common

Trout, afford their principal subsistence to the Esquimaux, and to the adventurous fur-traders, whose posts are dotted down, hundreds of leagues apart, throughout those inhospitable countries.

Again, throughout the whole of that huge territory lately won at the sword's point, by the Saxon energy of young America, from the degenerate children of old Spain, throughout the British possessions, and even in those far northern shores which the Russian holds upon this western continent, the estuaries and courses of those waters which pour into the Pacific can boast not only the true Salmon, but many fine, distinct varieties. Many years will not probably elapse, taking into consideration the incessant stream of immigration which is almost overflowing Northern California, and remembering the restless, enterprising energy of the Anglo-American race, before railroads, even to the Pacific, across the western prairies, and through the gorges of the Rocky Mountains, will open this new world to the adventurous angler, and the dwellers of the Atlantic cities will make their trips to the Salmon rivers of the Pacific with less trouble, and in less time, than it took their sturdy Dutch forefathers to visit Albany, now reached with ease in a few hours.

For the present, however, it is needless to discourse of those western waters, since time must pass before any species of game will be pursued for sport on the shores of the Pacific, or killed except to afford subsistence to a population occupied wholly in the greedy race for riches. To the fisherman, therefore, the Eastern States and the north-eastern British provinces afford the only accessible Salmon fishing; and I should strongly urge

it upon those who are enthusiastic about this fine sport, not to waste time even in the Kennebec or the Penobscot, but to pack up their traps at any time between May and September, and set forth at once for the city of St. John's, in New Brunswick.

This town, which might be styled not inaptly the paradise of American fly-fishers, may be reached with ease in a few days viâ Boston, whence, if I am not mistaken, a stout and well-found steamer, the Admiral, takes her departure every Wednesday for New Brunswick. In St. John's every requisite for the prosecution of the sport can be obtained, every information concerning the vast waters, and every facility for the procurement of guides, boats, and the like will be gladly furnished, and every thing that hospitality can effect will be lavishly offered to the gentle angler.

I venture here to mention the name of an enthusiastic and thorough fisherman, Mr. Perley, her Majesty's emigration officer in the city of St. John, as one certain to do whatever in his power lies to forward the views and promote the pleasure of any who shall visit his part of the world, led by the love of the gentle science; and I take the same opportunity of thanking him for the very valuable information he has afforded me concerning the fisheries and fishing of the province, and of bespeaking his friendship and attention for any of my readers who shall be induced by the perusal of these pages to wet a line in the rapids of the St. John, the Obscache, the Chemenpeek, or the Richibucto.

Before proceeding to describe the mere technical portions of Salmon fishing, and the implements necessary for the prosecution of the sport, I shall take the liberty of quoting from myself

a chapter of a novelette now in course of publication in Graham's excellent magazine, entitled Jasper St. Aubyn. I do this not egotistically, nor altogether to save time and trouble, but rather because it contains as correct an account of the mode to be pursued in casting for the Salmon, hooking, playing, and killing him in an English river, as I am capable of writing; and because the variety of the narrative style may possibly prove a relief to the reader, after the drier routine of more didactic writing.

It is scarcely, perhaps, necessary to add that the mode of fishing for the Salmon in England and America are identical, the tackle and implements the same, and the same flies the most killing in all waters, of which singular fact, and other matters connected with which, I shall say more hereafter. Nor, I presume, need I apologise to my reader for the slight anachronism which has attributed to an ideal personage supposed to live in the age of the Second James all the modern improvements and advantages possessed by the anglers of the present day, and all the skill and science which were certainly not to be found at that time in any Salmon-fisher, not excepting even good quaint Father Izaak, whose maxims on Salmon-fishing, and indeed on fly-fishing in general, savour far more of antiquity than of utility.

"It was as fair a morning of July as ever dawned in the blue summer sky; the sun as yet had risen but a little way above the waves of fresh green foliage which formed the horizon of the woodland scenery surrounding Widecomb Manor; and his heat, which promised ere mid-day to become excessive, was

tempered now by the exhalations of the copious night-dews, and by the cool breath of the western breeze, which came down through the leafy gorges, in long, soft swells from the open moorlands.

"All nature was alive and joyous; the air was vocal with the piping melody of the blackbirds and thrushes, carolling in every brake and bosky dingle; the smooth, green lawn before the windows of the old Hall was peopled with whole tribes of fat, lazy hares, limping about the dewy herbage, fearless, as it would seem, of man's aggression; and to complete the picture, above a score of splendid peacocks were strutting to and fro on the paved terraces, or perched upon the carved stone balustrades, displaying their gorgeous plumage to the early sunshine.

"The shadowy mists of the first morning twilight had not been dispersed from the lower regions, and were suspended still in the middle air in broad fleecy masses, though melting rapidly away in the increasing warmth and brightness of the day.

"And still a faint blue line hovered over the bed of the long rocky gorge, which divided the chase from the open country, floating about it like the steam of a seething cauldron, and rising here and there into tall smoke-like columns, probably where some steeper cataract of the mountain-stream sent its foam skyward.

"So early, indeed, was the hour, that had my tale been recited of these degenerate days, there would have been no gentle eyes awake to look upon the loveliness of new-awakened nature.

"In the good days of old, however, when daylight was still

deemed to be the fitting time for labour and for pastime, and night the appointed time for natural and healthful sleep, the dawn was wont to brighten beheld by other eyes than those of clowns and milkmaids, and the gay songs of the matutinal birds were listened to by ears that could appreciate their untaught melodies.

"And now, just as the stable clock was striking four, the great oaken door of the old Hall was thrown open with a vigorous swing that made it rattle on its hinges, and Jasper St. Aubyn came bounding out into the fresh morning air, with a foot as elastic as that of the mountain roe, singing a snatch of some quaint old ballad.

"He was dressed simply in a close-fitting jacket and tight hose of dark-green cloth, without any lace or embroidery, light boots of untanned leather, and a broad-leafed hat, with a single eagle's feather thrust carelessly through the band. He wore neither cloak nor sword, though it was a period at which gentlemen rarely went abroad without these, their distinctive attributes; but in the broad black belt which girt his rounded waist he carried a stout wood-knife with a buckhorn hilt; and over his shoulder there swung from a leathern thong a large wicker fishing-basket.

"Nothing, indeed, could be simpler or less indicative of any particular rank or station in society than young St. Aubyn's garb, yet it would have been a very dull and unobservant eye which should take him for aught less than a high-born and high-bred gentleman.

"His fine intellectual face, his bearing erect before heaven, the graceful ease of his every motion, as he hurried down the

flagged steps of the terrace, and planted his light foot on the dewy greensward, all betokened gentle birth and gentle associations.

"But he thought nothing of himself, nor cared for his advantages, acquired or natural. The long and heavy salmon-rod which he carried in his right hand, in three pieces as yet unconnected, did not more clearly indicate his purpose than the quick marking glance which he cast towards the half-veiled sun and hazy sky, scanning the signs of the weather.

"'It will do, it will do,' he said to himself, thinking as it were aloud, 'for three or four hours at least; the sun will not shake off those vapours before eight o'clock at the earliest, and if he do come out then hot and strong, I do not know but the water is dark enough after the late rains to serve my turn a while longer. It will blow up, too, I think, from the westward, and there will be a brisk curl on the pools. But come, I must be moving, if I would reach Darringford to breakfast.'

"And as he spoke he strode out rapidly across the park toward the deep chasm of the stream, crushing a thousand aromatic perfumes from the dewy wild-flowers with his heedless foot, and thinking little of the beauties of nature, as he hastened to the scene of his loved exercise.

"It was not long, accordingly, before he reached the brink of the steep rocky bank above the stream, which he proposed to fish that morning, and paused to select the best place for descending to the water's edge.

"It was, indeed, a striking and romantic scene as ever met the eye of painter or of poet. On the farther side of the gorge, scarcely a hundred yards distant, the dark limestone rocks rose

sheer and precipitous from the very brink of the stream, rifted and broken into angular blocks and tall columnar masses, from the clefts of which, wherever they could find soil enough to support their scanty growth, a few stunted oaks shot out almost horizontally with their gnarled arms and dark-green foliage, and here and there the silvery bark and quivering tresses of the birch relieved the monotony of colour by their gay brightness. Above, the clifts were crowned with the beautiful purple heather, now in its very glow of summer bloom, about which were buzzing myriads of wild bees, sipping their nectar from its cups of amethyst.

"The hither side, though rough and steep and broken, was not in the place where Jasper stood precipitous; indeed it seemed as if at some distant period a sort of landslip had occurred, by which the summit of the rocky wall had been broken into massive fragments, and hurled down in an inclined plane into the bed of the stream, on which it had encroached with its shattered blocks and rounded boulders.

"Time, however, had covered all this abrupt and broken slope with a beautiful growth of oak and hazel coppice, among which, only at distant intervals, could the dun weather-beaten flanks of the great stones be discovered.

"At the base of this descent, a hundred and fifty feet perhaps below the stand of the young sportsman, flowed the dark arrowy stream—a wild and perilous water. As clear as crystal, yet as dark as the brown cairn-gorm, it came pouring down among the broken rocks with a rapidity and force which showed what must be its fury when swollen by a storm among the mountains, here breaking into wreaths of rippling foam where some unseen

ledge chafed its current, there roaring and surging white as December's snow among the great round-headed rocks, and there again wheeling in sullen eddies, dark and deceitful, round and round some deep rock-rimmed basin.

"Here and there, indeed, it spread out into wide, shallow, rippling rapids, filling the whole bottom of the ravine from side to side, but more generally it did not occupy above a fourth part of the space below, leaving sometimes on this margin, sometimes on that, broad pebbly banks, or slaty ledges, affording an easy footing and a clear path to the angler in its troubled waters.

"After a rapid glance over the well-known scene, Jasper plunged into the coppice, and following a faint track worn by the feet of the wild-deer in the first instance, and widened by his own bolder tread, soon reached the bottom of the chasm, though not until he had flushed from the dense oak covert two noble black cocks with their superb forked tails, and glossy purple-lustred plumage, which soared away, crowing their bold defiance, over the heathery moorlands.

"Once at the water's edge, the young man's tackle was speedily made ready, and in a few minutes his long line went whistling through the air, as he wielded the powerful two-handed rod, as easily as if it had been a stripling's reed, and the large gaudy peacock-fly alighted on the wheeling eddies, at the tail of a long arrowy shoot, as gently as if it had settled from too long a flight. Delicately, deftly, it was made to dance and skim the clear, brown surface, until it had crossed the pool and neared the hither bank; then again, obedient to the pliant wrist, it arose on glittering wing, circled half round the angler's

head, and was sent fifteen yards aloof, straight as a wild bee's flight, into a little mimic whirlpool, scarce larger than the hat of the skilful fisherman, which spun round and round just to leeward of a grey ledge of limestone. Scarce had it reached its mark before the water broke all around it, and the gay deceit vanished, the heavy swirl of the surface, as the break was closing, indicating the great size of the fish which had risen. Just as the swirl was subsiding, and the forked tail of the monarch of the stream was half seen as he descended, that indescribable but well-known turn of the angler's wrist, fixed the barbed hook, and taught the scaly victim the nature of the prey he had gorged so heedlessly.

"With a wild bound he threw himself three feet out of the water, showing his silver sides, with the sea-lice yet clinging to his scales, a fresh sea-run fish of fifteen, ay, eighteen pounds, and perhaps over.

"On his broad back he strikes the water, but not as he meant the tightened line; for as he leaped, the practised hand had lowered the rod's tip, that it fell in a loose bight below him. Again! again! again! and yet a fourth time he bounded into the air with desperate and vigorous soubresaults, like an unbroken steed that would dismount his rider, lashing the eddies of the dark stream into bright bubbling streaks, and making the heart of his captor beat high with anticipation of the desperate struggle that should follow, before the monster would lie panting and exhausted on the yellow sand or moist greensward.

"Away! with the rush of an eagle through the air, he is gone like an arrow down the rapids—how the reel rings, and the line whistles from the swift working wheel; he is too swift,

too headstrong to be checked as yet; tenfold the strength of that slender tackle might not control him in his first fiery rush.

"But Jasper, although young in years, was old in the art, and skilful as the craftiest of the gentle craftsmen. He gives him the butt of his rod steadily, trying the strength of his tackle with a delicate and gentle finger, giving him line at every rush, yet firmly, cautiously, feeling his mouth all the while, and moderating his speed even while he yields to his fury.

"Meanwhile, with the eye of intuition and the nerve of iron, he bounds along the difficult shore, he leaps from rock to rock alighting on their slippery tops with the firm agility of the rope-dancer, he splashes knee deep through the slippery shallows, keeping his line ever taut, inclining his rod over his shoulder, bearing on his fish ever with a killing pull, steering him clear of every rock or stump against which he would fain smash the tackle, and landing him at length in a fine open roomy pool, at the foot of a long stretch of white and foamy rapids, down which he has just piloted him with the eye of faith, and the foot of instinct.

"And now the great Salmon has turned sulky; like a piece of lead he has sunk to the bottom of the deep black pool, and lies on the gravel bottom in the sullenness of despair.

"Jasper stooped, gathered up in his left hand a heavy pebble, and pitched it into the pool, as nearly as he could guess to the whereabout of his game—another—and another! Aha! that last has roused him. Again he throws himself clear out of water, and again foiled in his attempt to smash the tackle, dashes away down stream impetuous.

"But his strength is departing—the vigour of his rush is broken. The angler gives him the butt abundantly, strains on him with a heavier pull, yet ever yields a little as he exerts his failing powers; see, his broad, silver side has thrice turned up, even to the surface, and though each time he has recovered himself, each time it has been with a heavier and more sickly motion.

"Brave fellow! his last race is run, his last spring sprung—no more shall he disport himself in the bright reaches of the Tamar; no more shall the Naiads wreathe his clear silver scales with river-greens and flowery rushes.

"The cruel gaff is in his side — his cold blood stains the eddies for a moment—he flaps out his death-pang on the hard limestone.

"'Who-whoop! a nineteen pounder!'

"Meantime the morning had worn onward, and ere the great fish was brought to the basket, the sun had soared clear above the mist-wreaths, and had risen so high into the summer heaven that his slant rays poured down into the gorge of the stream, and lighted up the clear depths with a lustre so transparent that every pebble at the bottom might have been discerned, with the large fish here and there floating mid depth, with their heads up stream, their gills working with a quick motion, and their broad tails vibrating at short intervals slowly but powerfully, as they lay motionless in opposition to the very strongest of the swift current.

"The breeze had died away, there was no curl upon the water, and the heat was oppressive.

"Under such circumstances, to whip the stream was little

better than mere loss of time, yet as he hurried with a fleet foot down the gorge, perhaps with some ulterior object, beyond the mere love of sport, Jasper at times cast his fly across the stream, and drew it neatly, and, as he thought, irresistibly, right over the recusant fish; but though once or twice a large lazy Salmon would sail up slowly from the depths, and almost touch the fly with his nose, he either sunk down slowly in disgust, without breaking the water, or flapped his broad tail over the shining fraud as if to mark his contempt.

"It had now got to be near noon, for, in the ardour of his success, the angler had forgotten all about his intended breakfast; and, his first fish captured, had contented himself with a slender meal furnished from out his fishing-basket and his leathern bottle.

"Jasper had traversed by this time some ten miles in length, following the sinuosities of the stream, and had reached a favourite pool at the head of a long, straight, narrow trench, cut by the waters themselves in the course of time, through the hard schistous rock which walls the torrent on each hand, not leaving the slightest ledge or margin between the rapids and the precipice.

"Through this wild gorge of some fifty yards in length, the river shoots like an arrow over a steep inclined plane of limestone rock, the surface of which is polished by the action of the water, till it is as slippery as ice, and at the extremity leaps down a sheer descent of some twelve feet into a large, wide basin, surrounded by softly swelling banks of greensward, and a fair amphitheatre of woodland.

"At the upper end this pool is so deep as to be vulgarly deemed unfathomable; below, however, it expands yet wider into a shallow rippling ford, where it is crossed by the high-road, down stream of which again there is another long, sharp rapid, and another fall, over the last steps of the hills; after which the nature of the stream becomes changed, and it murmurs gently onward through a green pastoral country, unrippled and uninterrupted.

"Just in the inner angle of the high-road, on the right hand of the stream, there stood an old-fashioned, low-browed, thatch-covered, stone cottage, with a rude portico of rustic woodwork overrun with jasmine and virgin-bower, and a pretty flower-garden sloping down in successive terraces to the edge of the basin. Beside this, there was no other house in sight, unless it were part of the roof of a mill which stood in the low ground on the brink of the second fall, surrounded with a mass of willows. But the tall steeple of a country church, raising itself heavenward above the brow of the hill, seemed to show that, although concealed by the undulations of the ground, a village was hard at hand.

"The morning had changed a second time, a hazy film had crept up to the zenith, and the sun was now covered with a pale golden veil, and a slight current of air down the gorge ruffled the water.

"It was a capital pool, famous for being the temporary haunt of the very finest fish, which were wont to lie there awhile, as if to recruit themselves after the exertions of leaping the two falls and stemming the double rapid, before attempting to ascend the stream farther.

"Few, however, even of the best and boldest fishermen, cared to wet a line in its waters, in consequence of the supposed impossibility of following a heavy fish through the gorge below, or checking him at the brink of the fall. It is true, that, throughout the length of the pass, the current was broken by bare, slippery rocks peering above the waters, at intervals, which might be cleared by an active cragsman; and it had been in fact reconnoitered by Jasper and others in cool blood, but the result of the examination was that it was deemed impassable.

"Thinking, however, little of striking a large fish, and perhaps desiring to waste a little time before scaling the banks and emerging on the high-road, Jasper threw a favourite fly of peacock's herl and gold tinsel lightly across the water; and, almost before he had time to think, had hooked a monstrous fish, which, at the very first leap, he set down as weighing at least thirty pounds.

"Thereupon followed a splendid display of piscatory skill. Well knowing that his fish must be lost if he once should succeed in getting his head down the rapid, Jasper exerted every nerve, and exhausted every art to humour, to meet, to restrain, to check him. Four times the fish rushed for the pass, and four times Jasper met him so stoutly with the butt, trying his tackle to the very utmost, that he succeeded in forcing him from the perilous spot. Round and round the pool he had piloted him, and had taken post at length, hoping that the worst was already over, close to the opening of the rocky chasm.

"And now perhaps waxing too confident, he checked his fish too sharply. Stung into fury, the monster sprang five times in

succession into the air, lashing the water with his angry tail, and then rushed like an arrow down the chasm.

"He was gone—but Jasper's blood was up, and thinking of nothing but his sport, he dashed forward, and embarked, with a fearless foot, in the terrible descent.

"Leap after leap he took with beautiful precision, alighting firm and erect on the centre of each slippery block, and bounding thence to the next with unerring instinct, guiding his fish the while with consummate skill through the intricacies of the pass.

"There were now but three more leaps to be taken before he would reach the flat table-rock above the fall, which once attained, he would have firm foot-hold and a fair field; already he rejoiced, triumphant in the success of his bold attainment, and confident in victory, when a shrill female shriek reached his ears from the pretty flower-garden; caught by the sound, he diverted his eyes, just as he leaped, toward the place whence it came; his foot slipped, and the next instant he was flat on his back in the swift stream, where it shot the most furiously over the glassy rock. He struggled manfully, but in vain. The smooth, slippery surface afforded no purchase to his griping fingers, no hold to his labouring feet. One fearful, agonising conflict with the wild waters, and he was swept helplessly over the edge of the fall, his head, as he glanced down foot foremost, striking the rocky brink with fearful violence.

"He was plunged into the deep pool, and whirled round and round by the dark eddies long before he rose, but still, though stunned and half-disabled, he strove terribly to support himself, but it was all in vain.

"Again he sunk and rose once more, and as he rose that wild shriek again reached his ears, and his last glance fell upon a female form wringing her hands in despair on the bank, and a young man rushing down in wild haste from the cottage on the hill.

"He felt that aid was at hand, and struck out again for life —for dear life!

"But the water seemed to fail beneath him.

"A slight flash sprang across his eyes, his brain reeled, and all was blackness.

"He sunk to the bottom, spurned it with his feet, and rose once more, but not to the surface.

"His quivering blue hands emerged alone above the relentless waters, grasped for a little moment at empty space, and then disappeared.

"The circling ripples closed over him, and subsided into stillness.

"He felt, knew, suffered nothing more.

"His young, warm heart was cold and lifeless—his soul had lost its consciousness—the vital spark had faded into darkness —perhaps was quenched for ever."

THE IMPLEMENTS OF SALMON FISHING.

Time was when every angler was required to make his own instruments, from the rod itself to the artificial fly, but now, so general has become the love of this calm and gentle pursuit, and so multiplied and subdivided are all trades and professions, that there are few cities in the civilised world, of any magnitude, in which it is not easy, at any moment, to procure anything that is requisite for this pursuit.

Of consequence, the necessity for skill in manufacture of implements has passed away, and, comparatively speaking, but few anglers think it necessary any longer to be familiar even with the method of tying their own flies, the tackle-shops furnishing every possible variety, more neatly executed, it is probable, and consequently more killing, than any could be of private manufacture.

Still, to tie a neat and taking fly is a very useful accomplishment to the enthusiastic fisherman, especially when he is in wild and remote districts, as frequently must be the case; and at times some rare natural fly will be seen on the water, which it may be found expedient to imitate without delay.

The art of tying flies is attained with greater readiness, and, in fact, is far less difficult, than is generally thought, or than

would be imagined from the beautiful delicacy of the manufacture in its perfection. Most works on practical angling contain long and elaborate directions how to hold, and how to tie the feathers on the hook, but all these are, in my opinion, utterly valueless and futile; nor do I believe that any person has ever learned either to tie a fly, or to cast it when tied, from the perusal of any printed explanation; any more than the young sportsman has ever acquired the knack of shooting on the wing except by practice and experience.

The best way to acquire the art of tying flies is to observe carefully the manipulation of some skilful operator, and to obtain from him, during the performance of the work, oral instructions on the subject. From any good tackle-maker, a few lessons can be obtained at a very small expense, and these will, in a very short space of time, render the novice *au fait* to the trick.

The first thing to be considered in the angler's equipment is the rod, and it is here well to observe that, for almost every sort of fishing, some different and peculiar rod is essential. That which is commonly called a general fishing-rod, is, in fact, an abomination, and is useful only to the bait-fisher, and even for him is an awkward and ineffective instrument, it being impossible so to regulate the arrangement of the lower joints as to produce that regular and equable degree of pliancy needful alike with a stiff baiting or with a pliant fly-top.

For the Salmon, the rod should not be of more than eighteen or less than sixteen feet; the longer is apt to be a little cumbrous, and deftly to wield a double-handed Salmon-rod, during a whole summer-day, requires no small practice of the muscles.

The best wood for the butt, which should be very stout and solid, is well-seasoned maple, which is both light and strong; the second joint of ash, the third of hickory, and the fourth or top joint of equal parts of lance-wood, bamboo, and whalebone, neatly spliced together.

Many experienced anglers prefer to have their Salmon-rods manufactured without metal joints, but with neatly-cut and accurately fitting scares, which are adjusted and firmly spliced together with strong waxed-end when at the river-side.

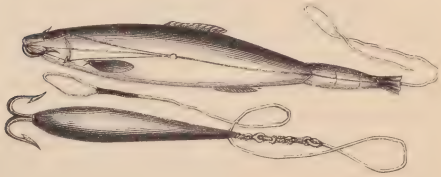
The supposed advantage of this method is the greater certainty of the rod's holding together during a severe struggle in the course of which a joint will sometimes be disengaged from the socket; and a greater equability of pliancy throughout the whole length, from the butt to the end, which is supposed to be in some degree impaired by the metallic ferules into which the heads of the feruled joints are inserted.

In the present improved state of the manufacture of all sporting articles, I must however admit that these objections are, in my opinion, very fanciful, and that the trouble of splicing and unsplicing greatly exceeds the benefit derived from the practice.

Nothing can be more beautifully regular and equal throughout their whole length, than the springy bend of the best English, Irish, Scotch, and American Salmon-rods; and I may here record it as my deliberate opinion, that the best rods in the world are now manufactured in the city of New York, and that Conroy is superior, as a fly-rod-maker, to either Chevalier or Martin Kelly, of universal reputation.

The reel should be very large, capable of containing three

hundred yards of twisted line, composed of hair and silk intermingled, and tapering gradually from the reel-end to the point, where it should be neatly looped to a bottom of the best and stoutest Spanish silk-worm gut, as thick, if possible, as the $\frac{1}{32}$ of an inch, to which the hook-links of the flies should be fastened by a knot of the following part. The hook-links for Salmon fishing should be of trebly-twisted gut; of the flies we will speak anon.



It is very desirable that the gut should be dyed, in order to deaden its silvery glitter, which is too conspicuous in the water, and often scares the fish. The best preparation for this purpose is dark green tea, which brings it nearly to the colour of water when slightly discoloured by rain, at which time the fish are most apt to bite freely.

Too much attention cannot be paid by the angler to the quality and condition of his gut-lengths, or to the proper adjustment of the knots and loops by which it is fastened. These can scarcely, indeed, be too narrowly or jealously scrutinised, as gut is a material which is easily frayed and cut by its own friction, and the slightest imperfection will often cause the loss of a very heavy fish.

The great beauty of gut is to be correctly round and perfectly equal in thickness, which enables it to stand a strain which if it were unequal would cause it to give way.

The reel should be of brass, which I prefer to German silver, bushed and rivetted with steel. It should have a balance handle, and a click, which is of great use, as preventing more of the line than is required from running off it while in the act of casting, before a fish is struck; but a catch or stop must on no account be used, as it will frequently stop the line at the very moment when it should run the fastest. I had almost forgotten to add, that the simple reel is vastly preferred by all truly scientific anglers to the multiplier, which in fact is now almost exploded.

The fly-hooks should unquestionably be of the Limerick bend, and even for spinning with the parr, or fishing with the worm or the deadly roe-bait, all of which are very killing to the Salmon, the same form is the preferable.

The great size and weight of the Salmon renders the use of the landing-net impossible, and it is, moreover, at the best, a clumsy and unportable machine. For it, therefore, the angler substitutes the gaff—a sharp, unbarbed hook, of convenient size, which screws securely into the head of a stout ashen-shaft, the butt of which may conveniently be hollowed so as to contain spare fly-tops, as it is inadmissible to subtract from the weight of the rod-butt by hollowing it.

With this hook, so soon as the fish is sufficiently exhausted to be drawn within striking, held in the right hand while the rod is transferred to the left, he gaffs the fish steadily and sharply in the solid portion of the tail below the abdominal

cavity, which gives it a firm hold, and enables the lucky sportsman to pull out even a forty-pounder with but little trouble.

It is not a bad plan to have a stout knife-blade, with the inner edge sharpened, hinged on the back of the gaff, which will often be found of use in cutting away any twig or other obstacle which may entangle the fly.

A creel is of little use to the Salmon fisher, as in order to carry any number of these noble fish one would be requisite of the size of a clothes-basket; and such is the weight of the fish, that, if you expect to be successful, an attendant is indispensable.

With these instruments, then, a well-filled fly-book in his pouch, and perhaps a spare gut foot-length round his hat, the fisherman may deem his outfit perfect.

A suit of plain dark clothes, a pair of stout nailed shoes, and heavy loose trowsers of the coarse Scotch plaid worn by the shepherds, is the best attire for the sportsman. India-rubber boots are an abomination, unwholesomely confining the perspiration, and excessively uncomfortable from the intense heat which they create; besides, an angler is hardly the sort of person to care much about wet feet or a soaked jacket.

Having now equipped and rigged him, we will conduct him to the marge of limpid lake or rapid torrent, and see how best his scaly prey he may ensnare.

In order to become a fly-fisher, I think that something of an especial genius is necessary—I mean a fly-fisher in the highest sense of the word, and regarded in the same light as the sportsman whom we can deservedly term a crack-shot.

Still, although something of a natural and inherent aptitude

is necessary, practice, experience, and a love of the art, go so far that no one who really desires to attain eminence in this skill need despair, for perhaps no one very keenly desires it who has not that aptitude, though perhaps latent, and even of himself unsuspected.

To teach a man, as I have said before, by writing or even by oral instruction, unless coupled with active practice and example, how to make a fly, how to cast a fly, how to hook a fish, or how, when hooked, to kill him, is to my apprehension impossible. Yet without some instructions on this subject, a work on Fishing would justly be deemed imperfect, and perhaps even impertinent.

After the first slight skill is attained which enables a fisherman to cast a fly at all without whipping it off the hook-length, the great points to be acquired are, precision in casting, and neatness in delivering the fly.

In Salmon fishing with the double-handed rod, all these things are somewhat more difficult than with the light twelve-foot Trout-rod, and more practice is requisite before perfection can be gained; yet the mode is identical, and the instructions which alone can be given are alike few and simple.

The first thing to be observed is, that the rod must not be firmly grasped, but held with a loose and delicate play of the thumb and fingers, as a cue should in billiard playing, or a foil in fencing. Secondly, that in throwing out the fly, nothing like a jerk or snap should be performed, such as is done with a four-horse whip in flanking a leader. It is very difficult to explain, except by comparison, what this movement is; but it may perhaps be described as by a sudden checking of the propelling

power, or as almost a retroversion of it at the moment of its greatest impetus, somewhat such as that which is termed spinning, or Englishing, a ball at billiards.

The rod being held lightly in the fingers, the butt of it must be so moved in front of the person, with all the muscles of the arm relaxed, the elbow and the wrist free and pliant, that the tip shall describe a complete circle above and something behind the head, and it will be not amiss for the tyro to practise this motion without attempting to cast as yet any line.

Secondly, it must be remembered, when the line and fly is brought into play, that by the circular motion of the tip, the whole line, with its cast of flies, must be made to stream out at full length, and to describe a semicircle, so that at the instant previous to propulsion, if we desire to throw directly forward, the flies shall be at the whole length of the extended line, exactly behind us; when they must be thrown out by a direct and even motion, without any jerk, and yet must be in some sort checked rather by a gradual holding up or cessation of the impelling force, than by any sudden stop or retrogression.

The mode of casting which I have endeavoured to describe for a forward throw, must be used in all cases; if to the right, the line must stream out, and the flies be extended at full length to the extreme left, and *vice versâ;* and this is the method by which accuracy and precision in casting can be acquired, and by perseverance in which, with experience, the fisherman will ultimately succeed in throwing his stretcher, or last fly, with certainty into a smaller circumference than that of his own hat.

This it is which we call precision.

By neatness, we intend the knack of so delivering the line that each one of the cast of flies shall alight upon the surface of the water singly and severally, and as lightly as the thistle-down, without any portion of the foot-length, much less of the line, bagging or falling in a bight upon the stream.

This delivering of the cast at the end of a perfectly straight, yet perfectly easy line, is the first great thing to be obtained. If we attempt to throw the flies, except after having made them describe a full semicircle in the direction opposite to the purposed cast, we shall throw them nowhere.

If we fling out the whole line loosely, it will fall in a baggy bight upon the water, probably striking the surface in advance of the flies, and certainly making a splash and scaring away the fish which we desire to allure.

If we check it too suddenly, or jerk it back at all, we shall snap off all our flies with a loud crack, and so remain disarmed and useless for the nonce.

In practising, the novice should use but a short line, five or six yards at the utmost, and a single fly—and when he can throw that with certainty into a space of a few feet in circumference, he may gradually let out his line till he has reached fifteen yards, which I regard as the extreme length that can be managed with certainty, neatness, and precision, and add to the stretcher his first and second droppers, more than which are wholly useless.

Having said thus much of the mode of casting the flies, we will suppose our angler clad in the plainest and least obtrusive colours, at the margin of the stream, if it be such as he can command with his double-handed rod, or wading it if

not too deep, or in his boat if it be too broad to be cast over successfully.

First he shall go *down* stream; for the motion of the water will so keep his line taut, the benefit of which hereafter; and he will also have fewer casts to make, and find less trouble in giving a natural and easy movement to the artificial insect which he must keep ever floating on the surface. Furthermore, the fish are wont to lie, especially in swift waters, with their heads up stream, and will therefore perhaps take the fly most readily when cast down, and drawn gently over them.

Secondly, he must on no account fish with the sun behind his back, for, if he do, the shadow of his body, with his arms thrashing the air, and the counterfeit presentment of his long rod vibrating aloft, will be thrown on the bright surface of the waters in such a manner as will undoubtedly alarm the fish; which, however much doubt there may exist as to their powers of auscultation, no one will deny to be capable of quick vision.

Thirdly, he shall not so draw his fly along the surface as to give it the appearance or reality of floating *up* stream, for flies do not in nature float up stream; nor do the Trout or Salmon, although they may never have studied logic, and are probably incapable of deducing consequences from causes, lack the ability to discern what is, from what is not natural.

Across the stream he may bring it gently and coquettishly home, with a slow whirling rotatory motion, letting it swim down in the swifter whirls of the stream, and float round and round in the eddies, with this special observance, that he shall, in so far as he can, keep it ever at the end of a tight line, for

so only will the fish hook itself, without any movement of the hand on the angler's part—an end most desirable to effect.

Both Salmon and Trout lie in wait for their prey, for the most part, rather than swim in pursuit of it in schulls or companies. They are often, I would say generally, found in pairs, and therefore after killing one in any favourable pool or eddy, it will be well not too soon to desert the spot, even although it may have been disturbed by the bustle and hurly of the first capture.

The tail of swift rapids, where some large stone breaks the force of the current, and causes a lull, or, as one would say of wind, a lee, will always be found a likely spot wherein to cast; and in pools, between two rapids or cascades, the head and the foot, immediately above the one and below the other descent, will generally each hold a fish.

Still clear deep reaches will again be found to contain many times the larger, and often the largest fishes, especially of Brook Trout; and these places require the neatest and the finest fishing, for two very sufficient reasons; first, that the transparency of the water enables the fish clearly to discern the angler, unless he stand well back from the margin of the bank; and, secondly, that its stillness allows all the imperfections of the artificial fly, and perhaps the gut to which it is appended, to be discovered by the intended victim.

In nothing is piscatory skill more distinctly evidenced, than by the instinctive accuracy with which, in whipping a stream, the practical angler will discern what places to fish closely, accurately, neatly; which to pass over lightly—in other words, which are more and which are most unlikely to hold the objects

of his pursuit; and this skill, this power, like that of casting the fly, or even in a greater degree than that, can be gained only by dint of long practice and accurate observation.

As I had occasion to remark, not once, but many times, in my "Field Sports," *cæteris paribus* of eye, hand, and nerves, on which almost everything depends, the closest observer of nature, the most diligent inquirer into the actions, the habits, the prey, the haunts, the every day life of the bird or beast which he is pursuing—in other words, the best naturalist—will be the best and most successful sportsman; and so it is, and perhaps even more so, in the case of the angler. And, indeed, after years spent in this exciting and yet gentle pursuit, the angler will ever find that he has something still to learn, that he has gained something daily, if he keep his ears, his eyes, his mind open to the sounds, the sights, the beautiful provisions of nature.

In large lakes, which must be fished from boats, the vicinity of the shores, the edges of shoals, and the holes in the close neighbourhood of large rocks or boulders which cause eddies, and above all, the entrances or outlets of streams, brooks, and rivers, are the likeliest places in which to find Salmon, but not reedy banks or weed beds, as is the case with the Pickerel and Mascalonge; and such spots as these deserve the utmost care and attention of anglers. And now, I believe that I have said all that I can say about the casting of the fly, and the places into which it should be cast in order to ensure the first success, the getting a rise, I mean, from this noblest of fishes. Little is done, however, in getting this rise, unless we know how to strike, and how to kill him when he has risen. On this head, perhaps, it might be said that the art of striking a fish, or so handling the

rod that the barbed hook shall be buried securely and quickly, or ere the fish has time to discover that the gaudy bait is an unreal mockery, without substance or savour, consists in knowing what is *not*, rather than what *is* to be done.

Very certain it is that the fly must not be jerked or twitched away quickly, as is done by ninety-nine hundredths of novices, who thereby, instead of fixing the bait in, flirt it out of the mouth of the Salmon, and probably prick him in doing so; rendering him thereby shy of again looking at the bait, and teaching him a lesson, which he may not forget in many days.

At two moments only, of the ordinary cast of a fly, is the fish nearly sure to hook himself—that is, when it first alights on the surface of the stream, and when it is in the very act of being withdrawn from it, for the purpose of making a fresh throw—for at these two moments only is it necessary at the end of a taut extended line. When a fish strikes boldly at either of these two points of time, it is very sure to hook itself without any exertion of the angler; but if the line is in the slightest degree curved or baggy, unless there is a certain almost indescribable movement of the wrist, the fly will often be rejected, owing to the discovery of its quality, and the fish will so escape scot-free.

This striking I have seen variously described, but never, in my opinion, comprehensibly. I consider that the great thing in fly-fishing is to keep the line always as straight as possible, never allowing any portion of it to float on the water, and to have the fly never submerged, nor yet skipping, but trailed evenly along the ripples, as if it were naturally floating down, at the end of a straight extended line. By this method the chances of striking your Salmon, without any effort on your own part,

will be hugely increased. If, however, it be found necessary to strike, this must not be done by a jerk or backward whip movement of the rod, but by the slightest possible turn of the wrist inward and downward; what that turn is, every angler knows, but it certainly cannot be described in writing, nor can it be, I think, very easily demonstrated—so exceedingly slight it is—by example.

More fish are, in my opinion, lost by clumsiness, and especially by over-violence at this moment, than at any other time; the utmost caution, therefore, and delicacy of manipulation are indispensable; and at first, until he has killed some fish and obtained some practical experience in the art, I confidently advise the novice to beware of striking; to allow the fish, if possible, to hook himself, and rather to lose him from his not doing so, than from his own act by whipping the half-swallowed fly out of his imperilled jaws. If strike he must, let him do it with the least possible force or exertion.

When first a large and lively fish feels the hook, he will not unfrequently, if checked suddenly, throw himself clear out of the water to the height of several feet, and so endeavour to cast himself across the tightened line, which, if he succeed in doing, he shall break it surely, and escape. The counter-movement to this dodge, which is often repeated many times in rapid succession, is to sink the top of the rod quickly, so as to slacken the line, and suffer the fish to strike it only when lying in a bight on the water; but care must again be taken here to reel it in again quickly, lest it may become entangled by the fish rushing suddenly in towards the angler.

Beyond this there is not much to say on the score of playing

a hooked fish; the great end and object is to keep him, with as heavy a strain as you can venture to support upon his mouth, with his head *down* stream; for in that position the water enters his gills the wrong way, so that the vital principle of the oxygen cannot be separated from it by the bronchial apparatus, and the fish naturally dies by suffocation, or by something analogous to drowning.

To effect this, very much delicacy and nicety of touch are requisite; the rushes of the fish are sometimes of fearful impetus and velocity and sustained for such a length of time as to take nearly all the line off the reel, and to compel the angler to run at full speed, up or down the bank, as it may be, in order to avoid smashing his tackle. It is well here to observe, that it is in all cases the best plan to follow your fish as early in the game and as rapidly as you can, rather than to let off too much line, as you thereby keep so much in hand for an emergency.

The great principle is to make the fish pull as hard as possible without ceding line, and never to give him an inch that he does not exact from you by force; the knowledge of the exact amount of resistance which you may offer, and of the when exactly and how much you must yield, is the grand proof of the Salmon-fisher's science. If he run for a rock, against which to smash your tackle, or for a cascade or cataract, over which you cannot pilot him with a hope of success, you must resist him to the last; which is done by advancing the butt, firmly grasped, toward him, and bearing your rod backward over your right shoulder, thereby compelling him to strain out the line, the velocity of which you must regulate with the ball of your thumb, inch by

inch from the reel, against the whole reluctance and spring of the elastic rod.

When the fish runs in, the rod must be held nearly erect, and the line reeled in as quickly as possible. If the fish turn sulky, as he will sometimes, and plunge down to the bottom, lying there like a stone or a lump of lead, he must be aroused and forced to run again by a pebble cast in as closely as may be to the spot where he lies, and then his run must be alternately humoured and controlled, like the whims of a pretty woman, until his resistance is overpowered, and, like her, he yields him to your will.

The fly is, as I have before observed, by far the most effective and killing bait for the Salmon, although it is very doubtful for what the animal mistakes it, since it has no resemblance in nature. The best are, in my opinion, combinations of peacock's herl and jay's wing, with body of pink, blue or green silk

twined with gold or silver tinsel; there are, however, many other gay and gaudy feathers which are nearly equally killing,

and every fisherman has his own favourites. The accompanying cut contains at No. 1, representations of several varieties of Salmon-flies, and at No. 2 of Lake-flies for great Trout, which I know to be killing, as I know them to be beautiful—and which were prepared especially for this work, to my order, by Mr. Conroy of Fulton-street, New York, of whom I have already spoken as, in my opinion, the best rod and tackle maker in America, if not perhaps in the world.

The Salmon, especially when quite fresh-run from the sea, will take the worm at times greedily; for which mode he must be fished for with a stiffer rod, similar to that used for Bass angling, with a quill-float, and enough of slot on the gut to carry the bait down close to the bottom. The best worms are the large *lob* or *dew*-worms, and they should be cleansed or scoured by keeping them for several days previous to using them in a pot full of moistened moss. Two worms should be used, and they should be baited thus:

Enter the barb of a large sized No. 0, or No. 1 Limerick Salmon-hook at the head of your first worm, and bring it out at the middle; run the worm quite up on the gut above the arming of the hook; again enter the barb at the middle of the second worm, and bring it up very nearly to the head. Draw down the first worm to meet the second, and the bait will move on the bottom with a natural motion.

Paste composed of roe of the Salmon, taken out when freshly killed, washed carefully, and cleansed of all the impurities, the blood and filamentous matter, thoroughly dried in the air, salted with two ounces of rock-salt, and a quarter of an ounce of saltpetre to a pound of spawn, dried gently before a slow

fire, or in an oven at a low heat, and then potted down and covered with melted lard or suet in earthen pots, is a most murderous bait both for Trout or Salmon. When a few weeks old it will cut out of the pots like stiff cheese, and will adhere readily to the hook, though it is not amiss to bind it on with a slip of Salmon-coloured floss silk. This will be found as effective for Brook Trout as for Salmon; and it is not unworthy of remark that the roe of the milter will most surely take the female, and that of the spawner the male fish. It has been hence suggested that if people *will* fish on the spawning beds when the fish are in the act of breeding, by using the female spawn or roe, they will do much less mischief than by any other mode, though it is little probable that the gothic savages who resort to these practices at all will trouble themselves so far as even to endeavour to do a minimum of mischief.

Lastly, the Minnow, the Shiner, the Smelt, the Sparling or Atherine, and above all, the young Parr, are very killing baits, especially when there is a freshet in the stream for the Salmon, upon spinning-tackle.

A powerful long rod should be used for this mode of fishing; the line and reel as before, but there should be at least two swivels on the line, and a small funnel-shaped piece of lead sliding upon the line.

There should be one large No. 1 Limerick hook at the end of the gut, and two smaller, about 10 and 5, tied back to back of the larger one. The smallest above, at the full length of the bait, to hook into the lip, when the funnel will slide down upon the nose. The second hook should be passed through the back below the first dorsal fin, and the large hook entered in the

solid part of the body beside the anal fin, and brought out at the fork of the tail, giving a curve to the fish, which causes it, when drawn rapidly through swift water, to spin and glance beautifully, in a manner most attractive to this noble fish. All the fins should be cut off except the pectoral on the outer side of the curve, which will cause it to spin more certainly.

Some persons use a second hook-length with three No. 7 hooks tied back to back triangularly, not entered in the bait, but suffered to play loosely around it; but I see no advantage in the addition.

With any of these baits, with the art to boot, and a clear eye, a steady nerve and true hand, anywhere almost eastward of the Kennebec, and thence northward to the grand St. Lawrence, the adventurous fisherman is certain of such sport, as, once tried, makes all other fishing for evermore stale, weary, and unprofitable.

TROUT FISHING.

This charming sport, second only in its excitement to the skill which it requires, and in the quality of the captive, to its elder sister, Salmon-fishing, cannot be enjoyed in any part of the known world in greater perfection than on the northern continent of America.

Everywhere from the Arctic Circle to somewhere about the forty-fourth degree of north latitude, everywhere from the mouth of the St. Lawrence and the wild shores of Gaspè and Chaleurs to the far coasts of the Pacific, and the swift streams of Oregon, this beautiful and active fish is found abundant, in every spring-stream and fountain-nourished lakelet.

Everywhere he is pursued eagerly, and esteemed a prize worthy of the sportsman's skill and the epicure's idolatry. To the northward and eastward he is, however, both the finest and the most plentiful. The rivers of New Brunswick and Nova Scotia swarm with Brook Trout ranging from half a pound to five pounds in weight. In the streams of Maine and New England they are equally abundant, although they are generally smaller in size, and are for the most part taken in the small mountain streams from which they rarely run down to salt

water; whence their colours are less brilliant, and their flesh inferior in flavour.

In the State of New York they are of unrivalled excellence, and are found in vast numbers, especially in the streams of the south side of Long Island, in the lakes and rivers of the north-eastern counties which debouch into the basin of the St. Lawrence, and in all the streams of the south-western tier of counties which find their way southwardly into the Delaware, the Susquehana, and the Alleghany.

All the waters of Northern and Western Pennsylvania are likewise admirably stocked with this delicious and game fish, nor has any one need to seek better sport than he can find at Carman's or Snedecor's on Long Island. In the Marshpee river, on Cape Cod, famous as being the favourite fishing-ground of that good sportsman and great statesman, Daniel Webster; in the Callikoon and Beaverkill on the east, and the fine Pennsylvanian streams on the west of the Delaware; in the net-work of lakes and rivers which renders Hamilton County in New York the angler's earthly paradise, or in the swift Canadian streams which swell the St. Lawrence, from the Michigan westward to the Sault St. Marie, and upward to the head of Lake Superior, sport is certain.

The implements of the Trout-fisher are similar except in size and power, to those used in the capture of the Salmon; but as less strength is necessary to subdue, so is, perhaps, even greater delicacy requisite to ensnare him.

The Trout-rod should be twelve feet long, and as pliant, almost, as a coach-whip, equally bending from the butt to the tip. It should be composed of hickory, lancewood, and bamboo,

with a solid butt of ash, at the extreme lower end of which should be attached a simple click-reel with a balance handle, but without a stop, capable of containing thirty yards of London-made hair and silk line, tapering equally from the reel to the point. The bottom, or leader, as it is called generally in America, should consist of about five yards of round tapering silkworm gut, and the flies should be three in number. Plain rings should be used on a fly-rod, and not the new tubular metallic guides, which stiffen it too much, and prevent its equal curvature under a strain.

For bait-fishing, spinning a minnow, or daping with a grasshopper, a stouter rod may be adopted, similar to that used for ordinary fresh-water, or shoal salt-water fishing.

The best baits are the Salmon-roe prepared as I have described it, common brandlings or dew-worms, and any small fish, and especially its own young fry, which may be used either dead on spinning tackle such as is described above, or alive, hooked through the back under the first dorsal fin, and sunk with shot to within a few inches of the bottom. In this mode, the slightest possible quill float should be adopted. The spinning is by far the more sporting and exciting method; and in large streams running directly into salt water, where the finest and greatest Trout are found, and where they do not willingly rise to the fly, none is much more killing. In addition to these, a grasshopper dropped deftly on the surface just before the nose of a fat, basking, lazy Trout, at the end of a short line, which is called daping, will oftentimes kill when all other plans fail; shrimps will be found effective in salt-water creeks and river mouths, and in those sea-bays which the fish haunts when in its

greatest perfection, and very frequently in the same localities it will bite at a small white crab, a muscle, or the throat, with the two pectoral fins attached, of one of its own species.

All of these, however, pale before the artificial fly, which is the most legitimate, the most scientific, the most exciting, because most difficult, and lastly, not leastly, the most killing, in nine waters of ten, of all the methods used to capture him.

There has long been a grand debate between fly-fishers, as to whether those are the most killing flies accurately copied from nature, or fancy flies similar to nothing in existence, composed of any gay and taking colours. It was formerly the general belief that the first were the most taking, and in the old books we find regular rules laid down, and particular flies ordered for every particular month of the year. But the former opinion has now been generally, and I think justly, discarded by the best anglers, while the practice of such a regular arrangement is now very generally exploded.

It is a remarkable fact that for the most part the same flies are the most killing in all waters, the world over, in Scotland, Ireland, Norway, and in the waters of America; nor is there any fly found more excellent for general use, or which possesses more ardent votaries than the red hackle, which has probably killed more and larger fish than any that can be named.

In America, Trout-flies are used of a much larger size, and that more effectively than in Europe, and the small English fly is justly less estimated in these western waters. The colours of the American flies are likewise much brighter on the whole

than is approved by British anglers, and fish will not unfrequently here take a gaudy scarlet ibis feather with a gold tinsel body, which a person who should use in Europe would not improperly be thought raving mad.

The flies which I hold the best are the red hackle, the ginger hackle, the black hackle, occasionally varied with bodies of gold or silver tinsel, the March-brown or dun-drake, the pale yellow dun and the blue dun—both very killing flies—the cow-dung fly, the stone fly, alder fly, the green and grey drakes; and for night and twilight fishing, any of the grey, cream-coloured, or mealy moths; of these I prefer a large white-winged moth with a black body. In many waters some of the coppery-golden and green peacock herls are found to kill well, and last season —1848—nothing was so successful on Long Island as the scarlet ibis with a gold tinsel body. For my own fancy, however, I decidedly prefer the hackles of almost every colour and variety, from the ginger, through all the shades of cock, grouse, partridge, woodcock, up to jet black; and my favourite cast is a *coch-a-bondu* or soldier palmer for my stretcher, a ginger hackle or blue dun for my second, and a black palmer or a dottrel hackle for my first dropper.

All these, as also the large gaudy lake flies, marked No. 2 on the cut at page 328, which very nearly resembles the Salmon-fly except in size only, and are deadly indeed to the Trout of the Adirondack waters, were all prepared expressly for representation in this work by Mr. Conroy, and are not in my opinion to be surpassed.

Beyond this I shall say nothing on the score of flies, nor shall I enter into any minute and elaborate description of these or

other varieties, with which most books on fly-fishing abound, *usque ad nauseam;* for I am satisfied that such descriptions must be entirely unsatisfactory and useless to the fisherman, who should attempt to tie flies by their aid, without other and more practical instruction; and they are so well known to all anglers, and to all tackle-makers, by their names, that they can be readily and unmistakeably ordered by letter, and obtained at any distance, from any of the large cities.

In progress of this subject, I take the liberty of quoting, from Dr. Bethune's very beautiful edition of Walton's Angler, the following paper, which was drawn up and contributed to that work by myself, on the Trout-fishing of Long Island, at the request of the accomplished author. It contains everything that I know or could collect at that time on this branch of the subject; and as I rest well assured that my borrowing it will in nowise injure or interfere with that beautiful and admirable work, while I feel that it would be useless and absurd to re-word the same ideas and opinions, and so render it pseudo-original, I do not hesitate to extract it entire:—

"The principal distinctions that strike the careful observer between the Trout of Long Island, or, indeed, I might say North America in general, and those of the British Isles, is, first, the great uniformity of size on the part of the former, which rarely exceed two or three pounds in weight, and *never*, so far as I have been able to ascertain, five or six; and, secondly, the fact that in the United States, Trout are never taken in the large rivers, or, if ever, so rarely as to prove the rule by the wonder arising from the exception.

"On Long Island there are some half dozen instances on

record, within three times as many years, of fish, varying in weight from four to six pounds, taken with the rod and line. Two of these instances occur to me, as connected with circumstances which may render the relation acceptable, as of anecdotes very unusual, and almost, but that they are proved beyond the possibility of doubt, incredible.

"Both these instances occurred at Stump Pond, on the north side; one in the pond itself, the other in the mill-pond, at the outlet.

"A gentleman from New York, thus runs the first story, who had never thrown a line, or taken a Trout in his life, and who had come out lately equipped with a complete outfit of Conroy's best and strongest tackle, all spick-and-span new, and *point device*, on throwing his hook, baited with a common lob-worm, into the water, was greeted with an immediate bite and bob of the float, which incontinently disappeared beneath the surface, carried away by the hard pull of a heavy fish. The novice, ignorant of all the soft and shrewd seductions of the angler's art, hauled in his prize, main force, and actually, without the aid of gaff or landing-net, brought to basket a five-pounder!

"The fact is remarkable; the example decidedly unworthy of imitation!

"The other instance to which I have referred is, in all respects, except the size of the fish, the very opposite of the former; as, in it, the success of the fortunate fisherman is due as much to superior science in his craft, as *his*, in the former, is attributable to blind and unmerited good luck.

"The hero of this anecdote is a gentleman, known by the

nom-de-guerre of Commodore Limbrick, a character in which he has figured many a day in the columns of the "Spirit of the Times," and who is universally allowed to be one of the best and most experienced, as well as the oldest fisherman of that city.

"After having fished all the morning, with various success, in the pond, he ascertained, it seems, that in the pool below the mill there was a fish of extraordinary size, which had been observed repeatedly, and fished for constantly, at all hours of the day and evening, with every different variety of bait, to no purpose. Hearing this, he betook himself to the miller, and there having verified the information which he had received, and having satisfied himself that neither fly nor minnow, gentle nor red-worm, would attract the great Trout, he procured, *horresco referens*, a *mouse* from the miller's trap, and proceeding to troll therewith, took, at the first cast of that inordinate dainty, a fish that weighed four pounds and three-quarters!

"Another fish or two of the like dimensions have been taken in Liff. Snedecor's and in Carman's streams; and it is on record that, at Fireplace, many years since, a Trout was taken of eleven pounds. A rough drawing of this fish is still to be seen on the wall of the tavern bar-room, but it has every appearance of being the sketch of a Salmon; and I am informed by a thorough sportsman, who remembers the time and the occurrence, although he did not see the fish, that no doubt was entertained by experienced anglers who did see it, of its being in truth a Salmon.

"In the double pond among the Musconetcong Hills, on the

confines of New York and New Jersey, in the Greenwood Lake in the same region, and in some other ponds in Orange County, Brook Trout have been occasionally taken of the same unusual size—one fish I saw myself on last New Year's Day, which, shameful to tell! had been caught through the ice, near Newburgh. This fish weighed an ounce or two above five pounds, and was well-fed, and apparently in good condition—but, as I said before, all these must be taken as exceptions, proving the rule, that Trout in American waters rarely exceed two or three pounds in weight, and never compare in size with the fish taken in England, and still less with those of the Scotch and Irish waters, in all of which the regular, red-spotted, yellow-finned Brook Trout are constantly taken, with the fly, of ten pounds weight and upward; and sometimes, in the lakes of Ireland and Cumberland, in the Blackwater, Coquet, and Stour rivers, attain to the enormous bulk of twenty-six and thirty pounds.

"With regard to the second point of distinction, I have never heard of a Trout being taken at all in the Hudson; never in the Delaware, even so far up as Milford, where the tributaries of that river abound in large and well-fed fish; never in the lower waters of the Connecticut, or any Eastern river, so far as the Penobscot, although the head waters of all these fine and limpid rivers teem with fish of high colour and flavour. In Great Britain, on the contrary, it is to the larger, if not to the largest, rivers that the angler looks altogether for good sport and large fish; and it is there as rare a thing to take a fish a pound weight in a rivulet or brook, as it is here to catch a Trout at all in a large river.

"In Canada, and in the British Provinces to the eastward of Maine, it is true that Sea Trout, or Salmon Peel, are taken of large size in the St. Lawrence, and in the rivers falling into the bays of Gaspè and Chaleurs; but although occasionally confounded with the Trout proper, this is in truth a totally different fish, and one, so far as I know, which is never taken in any of the waters of the United States.

"In appearance, the Brook Trout of America and Great Britain are to my eye almost identical; both presenting, in well-fed and well-conditioned fish, the same smallness of head, depth of belly, and breadth of back; the same silvery lustre of the scales, the same bright crimson spots. The flesh of the American fish, when in prime order, and taken in the best waters, is, I must confess, of a deeper red hue, and of a higher flavour, than that of any which it has been my fortune to taste at home —and I have often eaten the Thames Trout, which, rarely taken below ten pounds in weight, are esteemed by epicures the very best of the species.

"We travel now, be it observed, by railroad to our fishing stations, but for the convenience of reviewing the country, and scanning the waters, in regular succession as we pass eastward, I will suppose that, as in the pleasant days of old, we are rolling along in our light wagon, over the level roads, on a mild afternoon in the latter days of March, or the first of April.

"We have started from Williamsburgh or Brooklyn, after an early dinner; passed through Jamaica; rolled over the plains towards Hempstead; and, passing through it without stoppage, have turned suddenly to the right towards the bays, beyond which lies the beach, with the incessant surge of the Atlantic

moaning in the deep monotony of its calm, or thundering in the hoarse fury of its storm, against its pebbly barrier.

"Now we are in the land of Trout streams, baymen, and wild fowl.

"The rippling dash of falling waters catches our ear, at every half-mile as we roll along, and every here and there, the raised bank on our left hand with its line of stunted willows bent landward by the strong sea-breeze, the sluice-gate, and the little bridge, with the clear stream rushing seaward under it, tell us that we are passing a Trout pond.

"On the right hand, the salt meadows stretch away, a wide, waste, desolate expanse, to the bays, which glitter afar off under the declining sun, whence you hear at times the bellowing roar of a heavy gun, telling of decimated flocks of brant and broadbill.

"Now we pass by a larger pond than any we have yet seen, with a mill at its outlet, and in a mile farther, pull up at the door of Jem Smith's tavern.

"And there we will halt to-night, although it be a better station for fowling than fishing, for we are sure of neat though homely accommodation, and of a kindly welcome; and here it is that the first essay is to be made of Long Island waters.

"On this stream there are two ponds, both of which were formerly private property, and closed against all persons except those who were furnished with a permit; they are now open to all persons indiscriminately, and I believe without restriction as to the number that may be taken by each individual, or by a party. The consequence of this is, that these ponds have

deteriorated very rapidly, and that, although well-stocked with small fish of fair flavour and quality, Trout are rarely taken of such a size as to remunerate the exertions of a good fisherman. Half a pound may be taken as a *good* average of the fish killed here. In a creek below, where the tide makes, there are, of course, fish, but I never have heard of much work being done in it; and in truth, except that this is the first southern pond of any note, I would hardly advise the angler to pause here.

"About a mile and a half further eastward is a large pond, and a fine house, both recently constructed at a great expense by Judge Jones—the former exclusively designed as a fish-pond. The place has, however, passed out of his hands, and the house is kept as a hotel by one of the Snedecors. The pond has hitherto been private, but is now open, though with a limitation. It is well stocked with fish of a fair size. When I was last there, a fornight since, a gentleman had taken eight fish, weighing as many pounds, with the fly that morning. The largest did not exceed a pound and a half, but they were handsome, clean, well-fed fish, and, as the day was anything but propitious, easterly winds, and very raw and cold, I considered it fair sport. He had not been fishing above a couple of hours. I understand, however, that there are many Pike in this pond, and in the stream that supplies it; and I much fear that this must ultimately prove destructive to all the fish in the water, although those resident on the spot assert that the Pike never grows in that region to above half a pound, and rarely to that weight, and that little, if any, detriment is observed to arise from his presence.

"This, however, I cannot believe, for the growth of the Pike

is usually almost as rapid as his voracity is excessive; and I am aware of many instances, both in the United States and in England, where ponds and streams, excellently stocked with Trout, have been utterly devastated and rendered worthless by the introduction of this shark of the fresh waters.

"The house is well kept, as is almost invariably the case on Long Island; and I have no doubt that the angler may pass some days here with pleasure.

"Some miles beyond this, still keeping the southside road, we come to Babylon, where there is an excellent house, under the management of Mr. Conklin, of whom all accommodation may be obtained, both as regards fowl-shooting in the bays and Trout-fishing in the neighbourhood. There are several ponds and streams more or less well-stocked in this vicinity, but none of any particular note, either for the size or flavour of the fish.

"Such, however, is not the case with the next station at which we arrive, Liff. Snedecor's—in whose pond the fish run to a larger size than in any water we have yet noted. The Trout here, both in the pond and in the stream below, are noted for their great beauty, both of form and colour; and although there is some debate among connoisseurs as to the comparative flavour of Snedecor's fish and those taken at Carman's, eighteen miles further east, the judgment of the best sportsmen inclines to the former.

"The pond is of the same character with those which I have described heretofore, and can be fished only from boats. It is open to all anglers, but the number of fish to be basketed by each person in one day is limited to a dozen. In the stream

there is no limit, nor indeed can there be, as the tide-waters cannot be preserved, or the free right of fishing them prohibited. The Trout here are not only very numerous and of the first quality of excellence—their flesh being redder than that of the Salmon—but very large; the average probably exceeds a pound, and fish of two and two and a half pounds' weight are taken so frequently as to be no rarity.

"The outlet of this pond, after running a few hundred yards, opens upon the salt meadows, where there is no obstacle whatever to throwing a long line. It is broader and longer than any stream we have hitherto encountered, and is incomparably the best, containing fish even larger than those of the pond above, and, in my opinion, of a finer flavour. I believe it, indeed, to be an indisputable fact, that Trout, which have access to salt water, are invariably more highly coloured and flavoured than those which are confined to fresh streams by natural or artificial obstacles.

"There is no distinction, of which I am aware, in favour of pond or stream, for the use of the fly, the fish taking it readily in either, although as a general rule they will rise to it earlier in the fresh, than in the tide-water.

"At some distance down this stream there is a range of willows on the bank, nearly opposite to a place owned by Mrs. Ludlow; and under the trees are some holes famous for being the resorts of the largest fish, which affect here the deepest water and the principal channel. Here, as in the pond, fish of two and a half pounds are no rarity, and, in fact, such are taken here more frequently than above. I should say that one would rarely hook a Trout in this stream under one

and a half pounds; and the true angler well knows that a well-conditioned fresh-run fish, from this size to a pound larger, on the finest and most delicate tackle, will give him nothing of which to complain in the way of exercise or excitement.

"At a short distance from Snedecor's is another stream, known as Green's Creek, which contains a peculiar and distinct variety of Trout, which is called in that district the Silver Trout. I have not seen this fish, but learn from good sportsmen that it is of a much lighter and more pearly hue than the common Trout, the bright and silvery lustre of the scales prevailing over the back and shoulders. It is crimson spotted, but the fins are less strongly yellow, and it is perhaps a slenderer fish in form. The flesh is said to be firm and well-flavoured. The Silver Trout is rarely taken much over or much under a pound in weight, and rises to the fly or takes the bait indiscriminately. This stream has, I know not wherefore, of late years lost much of its celebrity, and is rarely visited by the best sportsmen.

At Patchogue, yet a few miles further, there is a very large pond, which was formerly perhaps the most famous on the island, both for the abundance and the size of the fish which it contained. They have, however, become latterly so scarce, that few persons from a distance think it worth while to pause there, but proceed at once to Sam Carman's, at Fireplace, eighteen miles eastward from Liff. Snedecor's; these two being in fact the *par excellence* fishing grounds of the Island, and the difference between the two rather a matter of individual prejudice and fancy, than of any real or well-grounded opinion.

"The character of the fishing at Fireplace is nearly similar to that at Islip; the stream flowing from the pond is larger, and

contains much larger fish, the most beautiful, both in shape and brightness of colour, of any on the Island. In this stream, two pounds is a very common size; perhaps, fish are as frequently taken of this weight as under it, and upwards to four pounds. Their flesh is very highly coloured, and their flavour, as I have observed before, second to none. Indeed, it is but a few years Carman's fish were estimated by old sportsmen the *only* fish worth eating; of late, however, fashion—which rules in gastronomic tastes, as otherwise—has veered a little in favour of the Islip Trout, and it remains at present a debateable point between the two. The course of Carman's stream lies chiefly through open salt meadows, and the banks are entirely destitute of covert, so that very careful and delicate fishing is necessary in order to fill a basket. Even with ground bait it is desirable to keep completely out of sight, walking as far from the bank as possible, and to avoid jarring the water, so wary and shy are the larger fish. It is also advisable to fish down wind. Trolling is very successful in this water, the same precautions being taken, and the bait-fish being dropped as lightly on the surface, as if it were a fly, so as to create neither splash nor sound. The pond above is likewise deservedly celebrated, the fish *averaging* at least a pound in weight, and equal in all respects to any pond Trout in this or any other region. The fly-fishing here in season is probably the best on Long Island, although of late, here, as everywhere else, Trout are becoming comparatively few in number; so that it has been found necessary to impose a limit to sportsmen.

"Not many years ago, a celebrated English shot and angler, who has since left this country, and who, I believe, was among

the first, if not the very first, to use the fly on Long Island waters, took between forty and fifty good fish in this pond before dinner, and in the afternoon basketed above a dozen of yet larger size in the stream below.

"This feat, the like of which will not, I fear, be soon heard of again, was performed with a fly, the body of which was composed of hare's-ear fur, and the hackle of a woodcock's wings,—a very killing fly, be it observed, for all waters, especially early in the season.

"On the same stream with Carman's pond, and at but a short distance above it, is another called Middle Island Pond, with a saw and flour-mill at the outlet, which contains a great number of fish, of very large and very uniform size, running from one and a half to two pounds weight. It is remarkable, however, that the Trout in the lower pond being esteemed the best, those in the upper should be the worst of any taken on the south side of the island. Such, notwithstanding, is the case; they are long, shallow, ill-fed fish, dingy-coloured, and woody-flavoured. They are not, however, black-mouthed, as are the fish of a pond which I shall have occasion to mention hereafter.

"I remember that a fact of the same sort is recorded of two lakes, I think in the *north* of Ireland, connected by a short stream running through a bog meadow. In the upper of these lakes the fish, as here, are worthless,—in the lower superlative; and they are never known to intermingle. How this should be, cannot well be explained; for, granting that the excellence of the fish arises from the soil and food, and that the inferior fish improves on coming to the superior water, still there must be a transition state.

"With this pond I shall close my notice of the south side waters, merely adding that at Moritches, and yet further east, there are many streams and lakelets abounding in fish, though inferior to those of the waters I have enumerated, both in size and quality; and these are, I believe, all open without limit to all persons who desire to fish them.

"It may be worth while here to mention, for the benefit of strangers, that the houses kept by Snedecor and Carman are by no means country taverns, at which nothing can be obtained, as is often the case in the interior, but hard salt ham and tough hens just slaughtered. Being frequented by gentlemen entirely, they are admirable hotels in every respect.

"I will now turn for a moment to the north side, on which there are also many streams containing Trout, but none, with a single exception, which can show size or numbers against the southern waters. That exception is Stump Pond, near Smithtown, now rented to a company of gentlemen, and of course shut to the public in general. The fish in this large sheet of water are very numerous, and very large, but are for the most part ill-shaped, ill-conditioned, and inferior in flavour,—long, lank fish, with very large black mouths. I have been informed that in latter years the fish in this water have been gradually improving, but of this I cannot speak from personal experience; it is, however, notorious, that occasionally Trout of very fine quality, both in appearance and flavour, have been caught here; which is somewhat remarkable, inasmuch as the same feeding grounds rarely produce two different qualities of fish.

"With regard to weather, a darkish day, with a moderately brisk breeze, sufficient to make a strong ripple on the water, is

the most favourable. It is somewhat singular that, in spite of the generally received opinion that southerly or south-westerly weather is the *only* weather for Trout-fishing, few old Long Island anglers are to be found who cannot state that they have taken as many, some say *more*, fish during the prevalence of easterly winds, as in any weather. A friend of mine, on whose authority I can perfectly rely, and to whom I gladly record my indebtedness for many facts stated in this paper, assures me that he has never known Trout to take the fly more freely than during a north-easterly snow-storm. Still, I must consider these as exceptions to the general rule; and I at least would select, if I had my choice, 'a southerly wind and a cloudy sky,' —always barring thunder, — and no objection to a slight sprinkling of warm rain.

"There is another peculiarity to observe in the Long Island waters—and, as far as I know, in them only—that Trout bite decidedly better and more freely, when the water is very fine and clear, than when it is in flood and turbid. Indeed, if there be a good ripple on the surface, the water can hardly be too transparent.

"It has been suggested to me, that this may be accounted for by the fact that in flood the waters are so well filled with natural bait, that the fish become gorged and lazy. I cannot say, however, that this is perfectly satisfactory to me; as the same must be the case, more or less, in all waters; whereas it is unquestionably the case, wherever I have fished, except on Long Island, that Trout are more easily taken in turbid than in fine water.

"As connected with the foregoing remarks, I will here add,

that, as a general rule, the minnow, with spinning or trolling tackle, is found to be more killing than ground bait in the ponds, and *vice versâ*, in the tide streams—probably from the mere fact that the minnow is the rarer in the one water, the red-worm in the other, and that each by its rarity becomes the greater dainty."

Beyond this I have nothing to add, with respect to Trout-fishing, with the exception of a few very general observations on the most likely times, seasons, and places in which to fish for the Trout, since the mode of taking them with the fly is in all respects the same as that already given under the head of Salmon-fishing, the modes of casting for, striking and playing these kindred fishes being in all respects identical.

In the first place, I am clearly of opinion that for very early fishing in March and April there is no place on this continent at all comparable to Long Island, where all along the south shore they can be taken in numbers almost innumerable, in every pond, stream, and salt creek, until the end of July, when they cease to bite freely. It is worthy of observation that very early in the season the bait is more killing than the fly, but that from May to the end of the season the fly-fisher will fill his creel when the bait-fisher will go empty-handed home.

In the salt creeks the fish takes the fly far less willingly than the bait; and in Carman's Creek, which is very decidedly the best Trout river on Long Island, it is said there is but one example of a fish being killed with the fly, by an old friend of my own, Mr. Luxford, formerly of H. M.'s Royal Dragoons, in whose eye, should this meet it, these words may awaken not

unpleasant reminiscences of his visit to the United States, and of his many, many sporting rambles with Frank Forrester.

In Carman's River the largest fish in America are, I think it will be allowed, mostly caught, running often quite up to five pounds weight, and I fully believe that if it were fished patiently and resolutely, especially at the grey twilight, or in the shimmering moonshine quite down to the bay, through the salt meadows, with a small Trout on good spinning-tackle, with three swivels, or with a very large gaudy fly, sunk, by means of a shot, to several inches below the surface, fish might be taken of seven or eight pounds weight. After Long Island fishing is nearly at an end, commences, and continues quite until September, that in the crystal streams of the Southern New York counties, in the Pennsylvanian streams, and, even later, in the waters of the Adirondack Highlands.

The Juniata, the Wyoming, the Upper Delaware, the Upper Alleghany, and the Upper Susquehana swarm with fish, as well as all their tributaries. The former rivers, and many other equally fine streams in the Alleghany and Blue Ridges, are within easy striking distance of Philadelphia; all the waters of the Delaware and Susquehana rivers can be reached in a day from New York, by the Morris and Erie Railroad; nor is there any lovelier or more romantic region, nor any waters dearer to the angler, than those which are now opened to the world by that noble avenue which is already complete so far as to Oswego, and which will soon link with its iron chain, Erie, and all the Upper Lakes to the Atlantic sea-board.

Hamilton County and its splendid fishing-grounds may be reached in many ways from New York, *viâ* Albany. From

Caldwell's on Lake George, from Lake Champlain by the Saranac, from Schenectady by the fish-house, and from the St. Lawrence, it is accessible to the Canadians by the Black River or the Racket.

These waters abound in the Brook Trout, and the Great Lake Trout, whereof a word more hereafter, though he very little merits a word; and good accommodation can now be obtained in many places through that of late inhospitable region; but much of the pleasure of a trip thither is destroyed by the swarms of mosquitoes, and yet worse, of venomous acupuncturing black and sand-flies, which phlebotomise almost beyond endurance the hapless unacclimated stranger who ventures into their demesnes, between May and the latter days of August.

Beyond this, I will only add, that the haunts of the Brook Trout closely resemble those of the Salmon; that they lie lurking for their passing prey under great stones, at the head or tail of swift-glancing rapids, in the small deep pools between, beneath the roots of great trees which protrude from banks over swirls and whirlpools, in holes, under weirs and sluices, and in no place more frequently than at the tail of mill-races.

The best and heaviest fish do not begin to feed until twilight, after which, for about three hours, they are exceedingly voracious, reposing again after that, until daybreak is at hand, when they again feed for an hour or two, lying quite still, and oftentimes refusing the most tempting baits during the whole of the day-time.

I have been told lately, and see no reason for doubting the accuracy of the information, that great sport may be had by baiting any well-ascertained haunt in a stream with the Common

cray-fish, his shell being cracked to pieces for several days in succession, previous to fishing it with a fly.

From the Brook Trout I pass on to his degenerate relations, the various kinds of Lake Trout, Mackinaw Salmon, Siskawitz, and, as it is called erroneously, Salmon Trout of the Lakes.

Before closing this article, I have judged it well to quote a few remarks on Trout-fishing, from that admirable work, Hofland's "Angler's Manual," inasmuch as they are in the highest degree appropriate to the Trout-fishing of America generally, while the observation on bush-fishing, dipping or daping, will be found of great advantage to the angler for small Trout in the beautiful tumbling mountain-streams far inland, in our northern and north-eastern States.

"THE ARTIFICIAL FLY.

"Fly-fishing is certainly the most gentlemanly and pleasant kind of angling, and it has many advantages over every other mode of fishing. In the first place, your apparatus is light and portable; for a slight rod, twelve feet long,—or, if wanted for a narrow and wooded stream, one of ten feet only would be more convenient,—a reel containing thirty yards of line, a book of artificial flies, and a landing-net, and you are fully equipped for the sport. In the second place, it is the most cleanly and the least cruel mode of angling, as you are not obliged to soil your hands by ground bait, or live baits, nor to torture a living fish, or insect, on your hook. Another charm in fly-fishing is, that you are never fixed to one spot, but continue to rove along the banks of the stream, enjoying, in your devious path, all the varieties of its scenery; the exercise induced is constant, and

not too violent, and is equally conducive to health and pleasure. I have already said that a one-handed rod should be ten or twelve feet long, and a two-handed rod from sixteen to eighteen feet; to either of which must be attached a reel containing thirty yards of twisted silk and hair line, tapering from a moderate thickness to a few hairs, at the end of which you are, by a loop, to attach the bottom tackle. This should be made of round, even gut, and three yards long; some persons prefer four yards; but I think too great a length of gut increases the difficulty in casting the line. Those bottom tackles may be purchased at the shops in two, three, or four-yard lengths. These lines should also taper gradually, the gut being much stronger at the end which is to be attached to the line on the reel, than at the end to which the stretcher-fly is to be fixed. When you fish with only two flies, the second—or drop-fly—should be at a distance of thirty-six or forty inches from the bottom, or stretcher-fly; but, if you use three flies, the first drop should be only thirty-four inches from the stretcher, and the second drop thirty inches from the first. These drop-flies are attached to the line by loops, and should not be more than three inches long; and, by having the gut rather stronger than for the end-fly, they will stand nearly at a right angle from the line. I recommend the beginner to commence with one fly only; but, at most, he must not use more than two; and, as for his mode of casting, or throwing his fly, now his tackle is prepared, I fear little useful instruction can be given, as skill and dexterity, in this point, must depend upon practice. I may, however, advise him not to attempt to cast a long line at first, but to try his strength, and gain facility by degrees. He must

make up his mind to hear many a crack, like a coachman's whip, and find the consequent loss of his flies, before he can direct his stretcher to a given point, and let it fall on the water lightly as a gossamer. When I come to speak of the different Trout streams in the neighbourhood of London, and elsewhere, I shall recommend the flies to be used for the place and season; in the meantime, I shall attempt to describe the haunts of the Trout.

"He is fond of swift, clear streams, running over chalky, limestone, or gravelly bottoms; but he is more frequently in the eddies, by the side of the stream, than in the midst of it. A mill-tail is a favourite haunt of the Trout; for he finds protection under the apron, which is generally hollow, and has the advantage of being in the eddy, by the side of the mill-race, awaiting his food. He delights also in cascades, tumbling bays, and weirs. The larger Trout generally have their hold under roots of overhanging trees, and beneath hollow banks, in the deepest parts of the river. The junction of little rapids, formed by water passing round an obstruction, in the midst of the general current, is a likely point at which to raise a Trout; also at the roots of trees, or in other places where the froth of the stream collects. All such places are favourable for sport, as insects follow the same course as the bubbles, and are there sought by the fish. After sunset, in summer, the large fish leave their haunts, and may be found on the scowers, and at the tails of streams; and during this time, so long as the angler can see his fly on the water, he may expect sport. Unfortunately, when the deepening shades of twilight drive the sportsman home, he is succeeded, on dark nights, by the poacher,

with his night-lines; and I am sorry to say that the north-country angler gives too faithful a picture of this night-fishing, which he himself practised.

"And now, having told the young angler where to search for fish, I must strongly impress upon him the necessity of keeping out of sight of the fish, for, if once seen, not any kind of bait he can offer will tempt a Trout to take it; therefore, approach the stream with caution, keeping as far from it as possible: first, fish the side nearest to you, and then cast your line so as to drop just under the bank on the opposite side of the stream, drawing it, by gentle snatches, towards you, always continuing careful to show yourself as little as possible.

"Some persons recommend fishing up stream, and throwing the fly before them; others walk down the river, and cast the fly before them. For my own part,—after much experience,—whenever I can do so with convenience, I cast my fly a little above me, and across the stream, drawing it gently towards me. If the wind should be against you, you will be constrained to stand close to the water's edge, and make your cast close to the bank on which you stand, either up or down the stream, as the wind may serve. Avoid, if possible, fishing with the sun behind you, as the moving shadow of yourself and rod will alarm the fish. The finer the tackle,—particularly the bottom tackle,—and the lighter the fly falls on the water, the greater will be your sport; indeed, some anglers use only a single hair for their bottom tackle; but when the water you fish is weedy, or much wooded, a single hair is very difficult to manage; but in ponds, or streams, free from impediments, it may be used by a skilful hand with great advantage. The winds most favourable to the

angler are south, south-east, south-west, and north-west; but in March and April this latter wind is generally too cold. A fresh breeze is favourable, especially for lake-fishing, mill-dams, or the still deeps of rivers; as the ripple on the water, caused by the breeze, has the same effect as a rapid stream, in preventing the sharp-sighted Trout from discovering the deception of the artificial fly.

"In lake-fishing you can hardly have too much wind, if you can manage your boat comfortably, and keep your fly on the water. There are very few lakes, with which I am acquainted, where good sport can be had from the shore; to ensure success, a boat is indispensable; and if you can procure a boatman well acquainted with the water, and the management of his boat, the battle is half won. After sunset the fish seek the shallow water, and a lake may then be fished from the shore. I have found, from long experience in lake-fishing, that it is better to cast your line towards the shore, rather than from the shore, or up or down the lake. The boat should be maintained, as far as possible, at a proper distance from the shore—that is, so that your flies may fall where the water begins to deepen from the shore. The boat should be allowed to drift with the wind, and the oars used as seldom as possible, and merely to keep it in a proper position and distance from the shore. The flies used in lake-fishing are larger than those for rivers; and I have frequently observed that the winged flies answer better than palmers. Perhaps the cause of this may be, that many rivers and small Trout streams are bordered with trees, which overhang them, and from which drop the insects that the palmers imitate; whereas the shores of the lake are generally

rocky, or stony, and mostly denuded of trees, and consequently do not produce this kind of food for their finny inhabitants."

"BUSH-FISHING, DIPPING, OR DAPING.

"One great recommendation to bush-fishing is, that it can be practised with success in the months of June, July, and August, when the river is low, and the sunshine bright, and in the middle of the day; at a time and season when no other circumstance would stir a fish, the largest Trout are taken by this method. The angler must be provided with a fourteen-feet rod, with a stiff top, and strong running tackle; he will seldom have to use more than a yard of line, the bottom of which should be of strong silkworm gut. I recommend strong tackle, because, in confined situations, overhung with wood, you will not have room to play your fish, but must hold him tight, and depend on the strength of the tackle.

"The size of your hook must depend on the size of your fly, from No. 7 to 9 for small flies and grubs, and, for beetles, No. 4 or 5. For bush-fishing, you should be provided with well-scoured brandlings and red worm, cad-baits, clock-baits, earth-grubs, beetles, grasshoppers, and a horn of flies, or, at least, as many of the above as you can procure. A small green grub, or caterpillar, which may be got in June and July, by shaking, over a sheet or tablecloth, the boughs of an oak-tree, is a most killing bait for this kind of fishing.

"Great caution is necessary in using your rod and line; for, if there are few bushes or brambles to conceal you, the water must be approached warily, as the large Trout often lie near

the surface, and, if you are once seen, they will fly from you. If the water should be deep, dark, and overhung with thick foliage, so that you can scarcely find an open space for your bait, your line must be shortened to half a yard, and sometimes less.

"If your flies are small, use two of them at once, as they frequently fall into the water in couples; when daping with the fly, if you see your fish, drop the fly gently on to the water, about a foot before him, and if you are not seen, he will eagerly take it. When your fish is struck, do not allow him to get down his head, for fear of roots and weeds, but keep him to the top of the water, where his fins and strength will be of little use to him; and in this situation, with good tackle, you may soon exhaust him, and make him your own by a landing-net, the handle of which should be two yards long; or he may be landed by a hook or gaff, with a long handle; and this, in some situations, amidst close, thorny brambles, will be found more useful than a landing-net, which is liable to be caught in the bushes.

"When you use the worm, the caddis, or any other grub, you will require a single shot, No. 6, to sink your bait, for it cannot sink too slowly, or cause too little disturbance in the water."

LAKE TROUT FISHING.

These great, bad, coarse and unsporting fish, of all the three varieties, are very nearly similar in their habits, lying for the most part in the deepest parts of the great lakes, seeking their food in the depths, and very rarely rising to the surface, either for food or play. Of these the great Mackinaw Salmon is perhaps the liveliest, and the Common Lake Trout (*Salmo Confinis*, of Dekay), the heaviest and most worthless.

They will scarce ever rise to a fly, and can rarely be taken even with a spinning minnow; with a live bait, however, or a peacock-fly, submerged to a considerable depth, with a bullet at the end of two hundred yards of line, played from a stiff rod at the stern of a light skiff or canoe moved rapidly through the water by sails or oars, they can be caught with considerable certainty. When hooked, however, they are but a heavy, torpid fish, bearing down with a sullen dead weight, and offering little more than a passive resistance. My friend William T. Porter, who constantly fishes in the waters of Hamilton County, informs me that he has been exceedingly and almost invariably successful with what seems a very strange and unsporting combination, a small fish namely, and a large fly on the same line, at about a yard's distance asunder.

The commonest way, by far, of angling for the Common Lake Trout is with a stout drop-line and a Cod-hook baited with a piece of salt pork, or the belly of a Yellow Perch or Brook Trout, let down into ten or fifteen fathom water. The fish bites, gorges his bait, for which you may allow him a few seconds' time, after which he is hauled in by main force. He is very indifferent eating, but perhaps the best way of preparing him when quite fresh out of water, is to crimp him to the bone after stunning him with a heavy blow on the head, wrap him up in a cover of thick greased paper, and roast him without removing the entrails, which will come away at a touch when he is cooked, under the ashes of a wood fire.

The Greatest Mackinaw Salmon, or Namaycush, and the Masamacush, or Arctic Charr, the latter a delicious and very voracious fish, are both taken in the same manner, in very deep water, in the summer, and through holes cut in the ice in the dead of winter. The favourite bait for both these fishes, is the belly of the yellow or grey Sucking Carp, or a piece of the raw heart or liver of a deer.

The Mackinaw fish is, however, a far bolder fish than any of his race, and occasionally follows any shining bait or squid up to the very surface of the water, if it is sunk by means of a weight, and then trolled sharply upward and onward to the surface. A piece of bright tin, with a rag of scarlet cloth attached to it, is, I am informed, found to be very successful and killing in the hands of the Indians. If this be the case, of which I am well assured, there can be little or no doubt that the deadly spoon, as it is called, an implement shaped precisely like the bowl of a table spoon, of bright metal, silver-washed

within, and brazed without, attached by a swivel at the lower extremity to a stout triple hook, and at the upper to a piece of strong gimp—which is so murderously destructive to the Black Bass of the St. Lawrence, and the Mascalonge—would be found no less effective with the Great Lake Trout; nor if any one should think it worth the while, would any harm be thought of his applying any invention, however slaughtering and poacher-like, to so base and caitiff a fish as the Lake Salmon.

Of Back's Grayling it is almost unnecessary here to speak, so far north are his customary haunts, and so very difficult and expensive is it to reach the districts in which only he exists. This is the more to be regretted for that he is one of the finest, if not the very finest, of all the Sporting Fishes of America. He is the boldest of biters at a fly, taking all those flies which are most preferred by the Brook Trout, leaping many times out of the water in his efforts to extricate himself from the hook, nor ever succumbing to his captor's will without a desperate resistance and a severe conflict. His flesh is no less delicious, and his excellence at the board in no wise inferior to his spirit, or the beauty of his colouring.

Of the Attihawmeg or White Fish of the great lakes, of the Otsego Bass, or as I should desire to have it hereafter called, the Otsego Lavaret, and of the little Smelt, which are all members of this same noble family, it needs not to make farther mention. They all have been occasionally taken with the fly, and will all undoubtedly be oftentimes again so captured, but the certainty of their rising is by no means sufficient to warrant the fisherman in wasting much time in their pursuit.

I may here, before finishing this head of my subject, observe

that in fact there is scarcely any fish, which will not apparently, from some whim or other, take the fly on the surface. I have myself so caught the Striped Bass, the Shad, the Herring, and the Northern Pickerel, with the Salmon-fly. All the family of the small *Cyprinidæ*, as the Roach, Dace, Bream, and Chub, will at times bite freely. In the Black River a species of this family rises very freely, and gives good sport. It is there called the Chub, and is, I believe, identical with another of the same division, known as the Wind Fish, in some of the streams of Duchess County, in the State of New York; and a thoroughly good fisherman of the city informed me yesterday that he had even caught Suckers with a Trout-fly, a fact which, but for the very great respectability of the source whence I derived the information, I should hardly have been inclined to credit.

None of these unimportant little fish, however, give sport enough, or are sufficiently good on the table, to make them worthy the pursuit of other than boys, snobs, and the ladies, who must pardon me for the company into which I have introduced them, certainly not according to their merits, or my estimation of them.

SALMON TROUT FISHING.

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THERE is but one region on this continent in which this admirable sport can be enjoyed at all; for, singular to say, the fish is only found in those rivers of New Brunswick which flow eastwardly into the Gulf of St. Lawrence, and the Bays of Gaspè and Chaleurs.

As if to make amends, however, for the narrow limits of their geographical range, they absolutely swarm during their season, in all the rivers which they frequent, traversing the sea bays in enormous schulls, and running up all the rivers to the head of tide-water, beyond which they do not ascend on these coasts. Why this should be the case it is not easy to conjecture, since it would appear to indicate a variation in the species from one of the normal habits of the race—that, I mean, which dictates to the parent fish that they must run up into the aerated waters of pure fresh rivers, in order to deposit their ova.

It may be, though I am not prepared to state that it is, the fact, that the ascent of all these rivers beyond a certain point is rendered impossible to the fish, by long rapids, or impassable cataracts, and that, perceiving the impossibility of arriving at the place of their proper and natural destination, the fish themselves cease to attempt it, and merely run up from the brackish

into the fresh water, in order to enjoy those alternations of temperature and food, in which all this family would appear especially to rejoice.

In the Scottish and English waters, the Salmon Trout, like the true Salmon, ascend quite to the head waters of the streams which they frequent, and deposit their ova precisely in the same manner as the other of their congeners. Here, it is evident, from Mr. Perley's reports to the British Parliament on the Fisheries of the Province, that they do nothing of the kind.

In the St. Lawrence, I have never heard of their being taken above Montreal, and rarely above Quebec, although there is no obstruction of any sort to hinder their running quite up to the mouth of Niagara, as is the case with the true Salmon.

One thing, however, it may be observed in this connexion, is very evident—that we know, comparatively speaking, almost nothing of the nature of fishes' instincts.

That they possess exceedingly tenacious memories, I cannot in the least doubt; and I have more almost than strong suspicion that these memories become hereditary, and are so transmitted from generation to generation.

In no other way can we account for that extraordinary instinct which leads back the young bird to the nest in which it was hatched, the Grilse to the river in which it had its birth—since the young birds are deserted by their parents at a period long antecedent to their return from their migration, and the fish never have the protection of their progenitors.

Nor in any other way can we explain the fact that the true Salmon never enter the Niagara River, although they run quite up to its mouth; even if we admit that its waters are entirely

unfitted for the purposes of the fish, and that it contains no shoals suited for spawning grounds; for, otherwise, we should expect that every individual fish would visit it at least once, in order to get a taste of its quality, and then, finding it unsuitable, desert it; whereas it is not on record that any fish has ever been taken of this species within its embouchure.

It may be that this wonderful power is an especial gift of Providence, preventing the fish from wasting too much time in seeking out a haunt, and so losing the season for the propagation of its species, by conducting it, truly as the needle to the magnetic pole, to the stream in which it was bred.

Be this, however, as it may, certain it is that in all the rivers which flow eastwardly from the provinces into the Northern Atlantic, with every flood-tide a horde of these beautiful fishes run up until they strike the junction of the salt and fresh water, usually at the foot of a fall or rapid, and there remain disporting themselves in the bright eddies, and throwing themselves quite out of their native element, in pursuit of their scaly prey.

In these places they will take very greedily any of the Scottish or Irish gaudy lake flies, leaping out of the water to take and seize them, and rising so voraciously and rapidly, that it is found impossible to fish with above one, or at the most, two flies; as it is not at all an unusual thing, if fishing with three, to hook at the same moment three several fishes.

In the Obscaché, several years since, Mr. Perley, who visited those waters in his official capacity, accompanied by Captain Egerton, of H. M. 43d Light Infantry, killed three hundred of these fine fish at the junction of the fresh and salt water, at the

foot of a long glancing rapid, in a single tide; and the former gentleman writes me word, that one morning in last season he killed, in an hour or two, eight fish, which weighed forty pounds.

This must be regarded, however, as an unusual run of luck; for the average size of the Salmon Trout does not appear to exceed four pounds, although they are taken up to seven and eight.

In the fresh water, within the rivers, they are taken exactly as the Salmon or Brook Trout, with a double or single-handed rod indifferently, and with any of the baits or flies which are killing to the others of the family; but best of all, with a scarlet ibis fly, with a gold tinsel body, which it prefers, even in bright water, to the best peacock herl and gay feather lake-flies. Although a fine game fish, a strong fighter, and hard dier, the Salmon Trout often comes in for a share of the Salmon Fisher's maledictions, jumping incessantly at the deceits intended to fascinate a larger and more potent victim, and, in fact, for insisting on being taken in lieu of its great congener.

In the sea bays, quite out of sight of land, while roving along the coasts, in search probably of its favourite estuary, the Salmon Trout is caught nearly as we catch Mackerel or Blue Fish, by trolling with the ibis fly, above described, at the end of thirty or forty yards of line, from the stern of a sailing-boat, under all canvas, in a stiff Mackerel breeze.

For this sport it is necessary to use a reel, with not less than a hundred yards of line—as the largest fish are taken by this method, and make a very violent resistance before they can be brought home.

The fly is kept skipping from wave to wave, as the boat laveers, or beats to windward, and the fish throwing itself out of the sea to secure it with its beautiful bright sides flashing like virgin silver in the sunlight, and when struck, constantly dashing away with the whole of the line from the whizzing reel, and giving a long run down wind, there is perhaps no sport in existence more full of pleasant excitement and adventure.

Nor when taken is the prisoner unworthy of the pains it has cost to kill him; for although smaller, he is in all other respects nearly of equal excellence with the true Salmon, and occupies a place second to him alone, with the judicious epicure.

Right well would it repay some of our gallant yachters to turn the heads of their tight crafts easterly, and bear away, as the old song has it, with a wet sheet and a flowing sail, for the rock-bound shores of Nova Scotia and New Brunswick, for once there, right hospitable would they find their welcome, and their sport right royal.

PICKEREL FISHING.

From the gigantic Mascalonge and its nearly equal congener, the Great Northern Pickerel, to the small barred variety, which is found only in the waters of Long Island, the whole of this fierce and ferocious family affords great sport to the fresh-water angler; and where the Trout and Salmon do not obtain, they are considered as the kings of the waters. There are many modes of fishing for them, and the baits which they will take are almost innumerable, comprehending in their range almost the whole animal creation, fish, flesh, fowl, and reptile.

When of great size they are excessively destructive—not to other fish only, of which they are the tyrants, but to frogs, water-rats, and even the young of wild-fowl.

They are taken either with trimmers, that is to say, small floating buoys with a rude reel attached, and a dependent live bait, with long set-lines; or again, by roving with the live, or trolling with the dead bait. In the former mode, it is the better way to use two moderate-sized hooks, one passed through the lip, and the other through the dorsal fin of the bait, which should be sunk about two feet below the surface, with a large float on the line, and suffered to swim about at his pleasure.

By this method, however, large Perch are often taken instead of the proper fish, and trolling with the gorge-hook, or fishing with the snap-hook, is by far better sport—especially the former—more legitimate, more exciting, and last, not least, more killing.

Of these methods, Mr. Hofland, in his "British Angler's Manual," thus discourses—and although he is speaking of the English Pike (*Esox Lucius*), not of the Mascalonge or Pickerel, as the fishes are of the same family, and the modes to be pursued in capturing them in all respects identical, I have not hesitated to extract his able and well-written description. I must premise, however, that where he speaks of dace, bleak or gudgeon for bait, we must substitute the roach, the minnow, the small bream, the New York shiner, or, which is decidedly the best and most killing of all, the young fry, or parr, of the Brook Trout.

Like Mr. Hofland, I infinitely prefer trolling with the gorge-hook to fishing either with the common snap, or with what is here called the sockdollager-hook; which last I regard as a great and dangerous humbug.

The rod for Pike trolling is well described below by Mr. Hofland, but one of Conroy's best general rods with spare tops—which is, in fact, the best for everything except fly-fishing—such as is used for Bass or Weak Fish, though with rather a stronger or stiffer top, will be found all-sufficient. In my opinion, a large click-reel, such as we use for Salmon, and a stout silken line of a hundred yards or better, will be found preferable to the contrivances of which Mr. Hofland discourses.

In casting the bait, the butt of the rod should be set against

the right hip, with the point inclined to the left; the bait should hang at the end of some ten or fifteen yards of line, and as many more should be drawn off the reel and held loosely in the left hand, the right hand grasping the butt about a yard above its extremity.

The body should then be turned slowly to the left, and brought round again, with a quick jerk, to its original position; the rod, as described before, will follow the same motion, and deliver its bait with great velocity and accuracy, the left hand playing out the line and checking its motion gently, so as to drop the bait upon the surface almost without creating a ripple, certainly without a splash.

A little practice will soon enable the merest tyro to deliver a dead bait on a leaded gorge into the circumference of his hat at twenty-five or thirty yards; and let him remember, that the longer his casts, the better and more like to kill.

The bait, after being cast, should be drawn gently and gradually home, the left hand constantly giving out and retracting the line; which, with the aid of one or two swivels above the gimp arming of the gorge-hook, will cause the fish to spin and glance beautifully in the water, and will render it a most attractive bait.

Hofland's instructions for striking and playing this fine fish cannot be surpassed; and paying due attention to the above, and giving heed to his instructions, the young angler will hardly fail of sport in any of the inland lakes or rivers of this country from Maine to Lake Superior and La Belle Rivière, as the French designate the Ohio, and from the Atlantic coasts to the Arctic Circle.

"I must here inform the novice in trolling, that little sport can be expected without a tolerably clear water.

"Nobbs, the father of the art of trolling, speaks of April and May as the best months; but, with due deference to so great an authority, I should say September, October, and November, are the best months, as the fish are then in prime season, and are worth taking, whereas in April and May they have not recovered from spawning, and although they may feed freely, they will be lank and thin, and in bad condition.

"Early in March the Pike are often taken full of spawn, but at this season they will seldom gorge the bait, and are generally taken by the snap. In the autumn, rivers and ponds begin to lose their weeds, which, in spring and summer, are so troublesome to the troller, and the fish then take to the deep holes, and their haunts are more easily found. The troller cannot be too early or too late at his sport, for during the middle of the day the fish seldom feed, unless it be cloudy and the breeze fresh.

"The best baits for Jack and Pike are roach, dace, bleak, gudgeon, minnow, small chub, and trout, or the skegger or brandling; when none of these can be procured, a small perch, by cutting away the back fin, may be used. Indeed, in the lakes of Derwentwater and Bassenthwaite, and various places where other fish are scarce, and the small Bass or Perch plentiful, it is the bait in general use. It is of the utmost consequence that the baits should be perfectly fresh and sweet; although a Pike might run at a stale bait, he will rarely pouch it, even at the snap: your baits cannot be too bright or fresh.

"Many writers have recommended birds, mice, frogs, &c., as

baits, but where small fish can be procured, no other will be wanted: of all the baits mentioned, I prefer a moderate-sized gudgeon, more especially for the gorge-hook, as the sweetness of the fish makes the Pike more eager to pouch it.

"On a dark day, and when the water is not very clear, I should prefer a clean, bright, small roach, dace, or bleak, particularly when fishing at the snap. When your fish are not kept alive in a bait-can, they should be carried in a tin box, and laid in a little fine bran, or pollard, and carefully washed before you bait with them.

"TROLLING TACKLE.

"The rod should be of strong bamboo cane, and from ten to twelve feet long, with a tolerably stiff top of whalebone or hickory; the rings should be five in number and not less than three-eighths of an inch in diameter in the opening, that the line may run freely.

"A strong winch will be required, which must hold at least forty yards of line, that is not subject to kink. Mr. Jesse recommends a trolling-line sold by Mr. Barth, of Cockspur-street, and I have seen a very good sort of line for this purpose, manufactured by Mr. Bazin, Duncan-place, Hackney. Some trollers prefer a rod twenty feet long, in which case your cast on the water is made in the same manner as in spinning the minnow for Trout, but with a longer line; and the lighter your bait falls upon the water the greater your success. Mr. Jesse strongly recommends the use of a wooden reel, one of about four inches and a half across, having the rim grooved for the reception of the line.

"'These reels turn round with great rapidity when the cast is made, letting out a sufficient length of line, and are wound up again by turning them with the fore-finger. They are much to be preferred to the common brass reel, especially in fishing from a boat; they avoid the noise and much of the trouble of winding up, and the line never kinks.'

"A reel similar to this is used by salmon-fishers in Scotland, and is there called a pirn. It will require much practice to enable the novice to cast a long line when the river is wide, but in small streams he will find little difficulty. Some anglers prefer fishing with the gorge-hooks, others with snap-hooks; but my own experience induces me to prefer the former as the best general mode of trolling; and this kind of fishing I shall first describe.

"THE GORGE-HOOK

"Is either a double or single hook, fixed on twisted brass wire, and loaded on the shank with lead, to which is attached a piece of gimp, eight or ten inches long, at the end of which is a small loop. To bait this hook you must have a brass needle, about seven inches long; put the loop of the gimp on the eye, or small curve, of the needle; then put the point of the needle in at the mouth of the fish, and bring it out at his tail; bring the gimp and wire along with it, the lead being fixed in the belly of the bait-fish, and the hook or hooks lying close to the outside of his mouth; then turn the points of the hooks towards his eyes, if a double hook, but if a single one, directly in a line with his belly; next tie the fish's tail to the arming wire very neatly, with strong thread. To the line on your reel you must attach a

gimp-trace, twenty-four inches long, having a swivel at each end, and one in the middle. The spring swivel, at the end of your line, is to be hooked on the loop of your baited trace, and you are ready for sport.

"When you are thus prepared, drop in your bait lightly before you, then cast it on each side, and let the third throw be across the river, or as far as you can reach—still letting the bait fall lightly on the water. In each case let your bait fall nearly to the bottom; then draw it up gently towards you, and again let it sink and rise till you draw it out of the water for another cast.

"I have before named the favourite haunts of the Pike, but when you are in a good water you should carefully fish every part of it, for you may often have a run where you least expect it:—weeds are a great annoyance to the troller, and he will often bruise his bait, and injure his tackle, unless he is very cautious. At every new cast be careful to examine the bait, and clear it from leaves and weeds, as the Pike is very dainty, and will not touch a soiled bait.

"The farther you throw your bait, if the water be broad—provided always that it falls lightly—the greater your chance of success, so that you are not interrupted by weeds, roots of trees, &c.; and if the water should be very weedy, you will be compelled to drop your bait into deep clear openings.

"When you feel a run, let your line be perfectly free, and allow the fish to make for his haunt without check; and when he stops give out a little slack line. By your watch, give him ten minutes to pouch the bait before you strike, which you may then do, by first gently drawing in your slack line, and then

striking gently; but should your fish move soon after he has been to his haunt, give him line, and he will stop again; but after this, if he move a second time before the ten minutes are expired, strike, and you will most likely secure him; but if he has only been playing with the bait, you will have lost him.

"When I have been so served once or twice, I generally resort to my snap-tackle.

"If you have fairly hooked your fish, he cannot easily break away, and as your tackle is strong, unless he is very large, you need not give out much line, but hold him fast and clear of the weeds; giving him but a short struggle for his life. The gaff is better than a net for landing a large Pike, for he is dangerous to handle, and his bite is much to be dreaded.

"When you are without either gaff or landing-net, seize the fish by putting your finger and thumb into his eyes. Half-a-dozen gorge-hooks may be carried in a tin box, with a little bran, ready baited, which will generally serve for a morning's sport.

"ANGLING AT THE SNAP.

"I shall first describe the old-fashioned mode, although it is now rarely practised.

"The spring-snap was formerly much in use, and may be purchased at any of the tackle shops. It consists of three hooks, the upper one small, and the two lower hooks large. The spring confines the lower hooks, but the spring gives way, and the hooks spread out when the fish is struck, and hold him securely.

"It is baited by introducing the point of the small hook

under the skin of the bait, on the side, and bringing it out at the back fin. Mr. Salter gives the following directions for the double hook-snap, which may be used either with a dead or live bait:

"'This snap-hook is a double hook, or two single hooks, No. 6, tied back to back, on gimp; to bait this snap, use the baiting-needle, having first placed the loop of the gimp to which the hooks are tied in the eye of the needle. Enter the point of the needle just above the gills of the fish, near the back, avoiding to pierce the flesh as much as possible, as it is only intended that the gimp should lie just behind the skin. Bring the needle and the loop of the gimp out near the tail, and draw till the hooks lie close to the part your needle entered, and are somewhat hid by the gills. The bait will live a long time after being thus hooked, and may be used in fishing with a float, by putting three swan shots on the gimp to keep it down:—always prefer a gudgeon for this baiting. I call this a snap, because, when fishing this way for Jack, I strike immediately I perceive a run, and have met great success this way of snap-fishing. This snap may be baited with dead fish, and trolled with.'

"Although I have quoted this mode of keeping a bait 'a long time alive on the hook,' I by no means recommend the practice to my young brothers of the angle, for I have long confined myself to the use of the dead bait; and with the gorge-hook, and the snap used in the manner I am about to describe, the Pike-fisher will never want sport in a well-stored water.

"I have before said, that by spinning the minnow with the same kind of tackle as that used in spinning the bleak for

Thames Trout, I have taken many Jack, Perch, and Trout; but I have also frequently lost my tackle, by the gut being bitten through by the sharp teeth of the Pike. To remedy this evil, gimp may be employed instead of gut; indeed, the snap-tackle now generally sold at the shops is of this description, but with larger hooks than I use, and coarser gimp.

"The angler must now make his casts in the manner recommended in trolling with the gorge-hook, letting the bait partly sink, and then drawing it towards him by gentle touches, by which means the bait will spin freely, and look bright and glittering in the water. When you feel or see a bite, let the fish turn, and then strike gently, but still with sufficient quickness and force to make your hooks hold; and now, with patience and perseverance added to these instructions, a complete disregard of cold and wind, and a determination never to lose his temper at trifling disappointments, the tyro may soon become a master."

The best waters for Pickerel of all kinds are deep, slow, sullen, shadowy streams, with dark, creeping waters, and shores fringed with Pickerel-weed, water-lilies, and marsh grass; and the best places in which to cast for them are the edges and openings of the floating weed-patches, under the cover of which they are wont to lie expecting their prey.

When the fish has taken the bait, the great thing is to give him time enough to gorge it, and not to mar all by impatience in striking before it is time. Once hooked, a steady hand, and cool temper, will soon ensure his capture; for though he is strong and fierce, his boldness and incautious way of biting permits the use of very strong tackle; and though he fights

hard for a while, he has neither the arrowy rush nor the innumerable artful resources of the true Salmon.

Pickerel fishing with trimmers on large lakes, as described under the head of Eel fishing, is by no means bad sport; and if several large fish chance, as is very often the case, to be hooked at once, the sinking and reappearance of the gaily-painted buoys, and their rapid motion through the water as the terrified fish rush away with them, offer an amusing spectacle, while the rapid chase with swiftly-rowed boats is full of gay excitement.

For this sport all the limped ponds and lakelets of this abundantly-watered land are most admirably adapted, from the farthest regions of New England through all the Eastern States to the fine inland lakes of Northern Pennsylvania. But to enjoy this sport, or that of trolling, in perfection, the angler should visit the Great Lakes and the streams of the great basin of St. Lawrence, and that stupendous river itself; in which, from the Thousand Islands, among which swarm both the Mascalonge and the Great Northern Pickerel, up to the farthest tributaries of Lake Superior, he will find sport, how gluttonous soever he may be of killing, which will not disappoint his wildest wishes.

In the same manner as the Pike is the Pike Perch or Sandre (*Lucioperca Americana*), erroneously called the Ohio Salmon, and other absurd provincial nicknames, which is a very fine and delicate fish, as well as a very sporting one, to be taken.

In the western waters he is the most abundant, and his favourite haunts are the tails of mill-races and whirling eddies under shady banks.

Him shall you surely take by trolling with the shiner, or bottom-fishing with the fresh-water cray-fish: nor will you despise him taken and smoking on your board.

The Black Bass, and the Rock Bass, and the large Yellow Perch, may also be taken by trolling; but there are for these fish other and more appropriate methods, of which I shall treat under their proper heads.

PERCH FISHING.

In every pond and river of America is this fish found, and none of the smaller and less vigorous biters are greater favourites with the angler.

There is, in my opinion, but one distinct species of the Yellow Perch in America, although there are several strongly marked, but I think casual varieties. In the salt-water bays, however, and the estuaries of tide rivers, there are two small and distinct species of the Bass, the little White Bass (*Labrax Pallidus*), and the Ruddy Bass (*Labrax Rufus*), both of which are constantly confounded with the Perch, to which they bear a strong resemblance, being members of one and the same family, and are called by the New York fishermen Sea Perch, White Perch, and Salt-water Perch.

These brave and hardy little fish run from a few ounces up to a quarter, and occasionally half a pound weight, which may be considered their maximum. They swim in large shoals, near the surface of the water, and are a most delicious fish. The Yellow Perch is found occasionally in company with them, although he rather affects fresher water, and I have thought that when taken in tide-streams he wears a greener garb than his ordinary dress.

The minnow, the red worm, and at times small shrimp will take all these varieties in the salt water; and from the very earliest dawn of spring to the setting in of severe cold weather, it is rare but the angler can find some sport with these quick and lively biters.

In almost every lakelet and pond, from the sea-board to Lake Huron, the Perch abounds, swimming in company with the Sun Fish (*Pomotis Vulgaris*), and the New York Shiner (*Stilbe Chrisolineus*); they run from half a pound up to three, four, and occasionally even five pounds' weight.

Saratoga Lake, the Greenwood Lake, in Orange County, New York, Hopathong, in Sussex County, New Jersey, Cayuga Lake, and the Northern lakes, Huron more especially, contain these fish of the largest size, and in the greatest perfection, but everywhere they may be caught almost at any time.

In pond fishing, the common ground-worm, or a spotted line with a quill-float, is perhaps the commonest bait; in America pastes are but little used as bait, nor in truth have I any great faith in them, although they are recommended by many good anglers. Of late years, however, I think they have lost repute. In the days of old Isaak they were esteemed almost sovereign.

The minnow, shiner, or small trout is, in this country, by all odds, the most taking bait. It should be affixed to the line by one or two small hooks, either through the lip or under the dorsal fin as lightly as possible, and being sunk with a shotted gut to within a foot or so of the bottom, should be allowed to swim about at his own will.

I do not approve of the frog for Perch fishing, although when

in the humour they will take this, or indeed almost any fish or reptile bait. The following is Hofland's advice as to the mode of fishing for him; and although the English and American species are distinct, their habits are identical, and the rules laid down below cannot be improved upon.

The general rod will do well for taking Perch, but a heavy one is not required. A reel and silk or grass-line with a gut bottom, or gimp, if Pike haunt the same waters, as is apt to be the case, will produce the desired effect.

The same tackle and mode of fishing will capture, at times, the Pickerel, the Pike Perch, the Rock Bass, and even the Trout, and it is therefore well, in Perch fishing, always to be provided with the tackle necessary to secure larger fish than those which you actually expect to take, and to be prepared and on the look-out that you be not surprised unawares.

"The Perch loves to lie by the side of the stream, and under deep banks, or near beds of the water-lily, the eddies at mill-tails, and tumbling bays, near the old piles of wooden bridges, or old kemp sheeting; the best baits for a Perch are, the minnow, the gudgeon, the red-worm, and the brandling.

"A minnow may be used by fixing a No. 9 hook under the back fin, or by passing it through his lips, with a cork-float, carrying shot according to the depth of the water. You should fish within a few inches of the bottom, and when a fish bites, a little time should be given before you strike, as the Perch is tender-mouthed, and, if not well hooked, is apt to break his hold. The paternoster is much used for minnow fishing; it may be had at all the tackle shops; it is sunk by a small bullet, and has three hooks at different distances, which may be baited

in the manner above described; but my favourite mode of Perch fishing is, by spinning the dead minnow, which gives me a chance, at the same time, of taking Jack and Trout.

"The gudgeon or the bleak may of course be used in the same manner when large Perch are expected.

"In worm-fishing, the brandling and the red-worm are the best; a No. 8 or 9 hook may be employed, and the float must be suitable for the water. Some anglers prefer roving for Perch in the following manner:

"Use a reel on your rod, and have bottom-tackle of three yards of gut, with a hook No. 8 or 9, with one or two shot-corns to sink the bait, which should be one or two well-scoured red-worms, and you must then cast your line across the stream, letting it sink, and drawing it towards you alternately, till you feel a bite, then allow a few seconds before you strike. You may also drop this bait into still, deep holes, as in Trout fishing; indeed, a practical angler—especially an old Trout fisher—will prefer this mode of worm-fishing to the use of the float."

After these apposite instructions there is little more to be said; but I cannot refrain from quoting a few lines in relation to the habits of the Yellow Perch in the West, from the pen of an admirable writer, who has contributed very largely to our stock of information concerning the fishes of the great lakes and western rivers of New York, by his admirable articles formerly published in the Buffalo Commercial Advertiser. I shall have occasion to quote from him again, in relation to the Black Bass, the Oswego Bass, and the Lake Sheep's-head, concerning which he has furnished us with the best information that we possess:

"In the spring, as soon as the ice has left the streams, the Perch begins running up our streams to spawn. He is then caught in them in great plenty. About the middle of May, however, he seems to prefer the Niagara's clear current, and almost entirely deserts the Tonawanda, and other amber waters. You will then find him in the eddies, on the edge of swift ripples, and often in the swift waters, watching for the minnow. As the water-weeds increase in height, he ensconces himself among them, and, in mid-summer, comes out to seek his prey only in the morning and towards night. He seems to delight especially in a grassy bottom; and when the black frost has cut down the tall water-weeds, and the more delicate herbage that never attains the surface is withered, he disappears until spring, probably secluding himself in the depths of the river.

"The back fin of the Perch is large, and armed with strong spines. He is bold and ravenous. He will not give way to the Pike or to the Black Bass; and though he may sometimes be eaten by them, his comrades will retaliate upon the young of his destroyers.

"The proper bait for the Perch is the minnow. He will take that all seasons. In mid-summer, however, he prefers the worm, at which he generally bites freely. He is often taken with the grub, or with small pieces of fish of any kind."

I may here observe that the Perch, like his congeners, the various tribes of Bass, will occasionally take the fly, though not so boldly or freely as to justify its use largely.

CARP FISHING.

This, I confess, I regard as very miserable sport; for though the fish is shy and wary, the difficulty in taking him arises only from his timidity and unwillingness to bite, and he is as lazy when hooked as he is slow to bite.

His proper haunts are deep, stagnant, slow-flowing streams, or ponds with muddy bottoms; and he lies under weeds, and among the stems and flat leaves of water-lilies, flags, and marsh-grasses.

Not indigenous to this country, he has been naturalised in the waters of the Hudson, where he is, for the present, protected by severe legislative enactments.

He will doubtless, ere long, become very plentiful; and as he is a rich fish when cooked *secundum artem*, and by many esteemed a great delicacy, he is likely enough to become a favourite with the angler.

Hofland thus describes the method of baiting the ground and fishing for Carp in England, and his directions are the best I have seen; they may be followed with implicit confidence:

"In rivers, the Carp prefer those parts where the current is not too strong, and where the bottom is marly, or muddy; and in lakes or ponds are to be found near beds of water-lilies, and

other aquatic plants. Old Carp are very crafty and wary, and will not easily be taken by the angler; but young ones, when a pond is well stocked, may be easily taken in great quantities.

"Notwithstanding these instances of familiarity, it is by no means easy to make a large Carp familiar with your bait: to do this, the greatest nicety and caution must be observed; but if the young angler, who has been often foiled in his attempts, will patiently and implicitly follow my instructions, he will become a match for this cunning fish.

"Use a strong rod with running-tackle, and have a bottom of three yards of fineish gut, and a hook No. 9 or 10; use a very light quill-float, that will carry two small shot, and bait with a well-scoured red worm.

"Now plumb the depth with the greatest nicety, and let your bait just touch, or all but touch, the bottom; but you are not yet prepared; for a forked stick must be fixed into the bank, on which you must let your rod rest, so that the float will fall over the exact spot you have plumbed. Now throw in a sufficient quantity of ground-bait, of bread and bran worked into a paste, and made into little balls; or, in want of these, throw in the garbage of chickens or ducks; and all this is to be done on the evening of the day before you intend to fish.

"The next morning, if in summer, be at the pond-side where you have baited and plumbed your depth, by four o'clock at least, and, taking your rod and line, which is already fixed to the exact depth, bait with a small, bright, red worm; then approach the water cautiously, keeping out of sight as much as possible, and drop your bait exactly over the spot you plumbed

over night; then rest part of your rod on the forked stick, and the bottom of it on the ground.

"You must now retire a few paces, keeping entirely out of sight, but still near enough to observe your float; when you perceive a bite, give a little time; indeed, it is better to wait till you see the float begin to move off, before you strike, which you may then do smartly; and, as the Carp is a leather-mouthed fish, if you manage him well, there is no fear of losing him, unless the pond is very weedy. Be careful to have your line free, that, if a large fish, he may run out some of your line before you attempt to turn him; as he is a very strong fish, and your tackle rather light, you must give him careful play before you land him.

"The extreme shyness of the large Carp make all this somewhat tedious process necessary to insure success; but I can safely assert, that I scarcely ever took this trouble in vain. Various baits are recommended for Carp,—such as green peas parboiled, pastes of all descriptions, gentles, caterpillars, &c.; but I have found the red worm the best, and next to this, the gentle, and plain bread-paste. Those who prefer a sweet paste may dip the bread in honey. Paste and gentle will answer better in autumn than spring. April and May are, in my opinion, the best months for Carp fishing; and very early in the morning, or late in the evening, is the best time for pursuing your sport."

The above mode of baiting bottom-grounds, and of fishing with the worm, in all its particulars, may be pursued with perfect success in all ponds and slow-running streams, for all the many species of the Carp family, which are, for the most part,

the least carnivorous of fishes, and consequently the most difficult to allure, as the Bream, Roach, Dace, Chub, and Shiner, as they are provincially termed, though by no means identical with the European fishes of the same names. The Suckers (*Catastomi*), a sub-genus of the same family, will hardly take any bait whatsoever.

While fishing, as above described, both small river Perch and Eels of all sizes are likely to be hooked, as the baited bottom-ground allures all those species which seek their food at the bottom to its vicinity.

STRIPED BASS FISHING.

With the sole exception of Salmon fishing, this is the finest of the seaboard varieties of piscatorial sport. The Striped Bass is the boldest, bravest, strongest, and most active fish that visits the waters of the Midland States, and is, as I have before observed, to be surpassed only by the Salmon.

Everywhere, from the capes of the Chesapeake to the St. Lawrence, they run up the rivers to spawn in the early spring, and shelter themselves in the shallow lagoons within the outer bars during the winter.

Everywhere they are fished for eagerly, and esteemed alike a prize by the angler and the epicure.

In every manner they are fished for with success, and with almost every bait.

The fly will take them brilliantly, and at the end of three hundred yards of Salmon-line a twelve pound Bass will be found quite sufficient to keep even the most skilful angler's hands as full as he can possibly desire.

The fly to be used is any of the large Salmon flies, the larger and gaudier the better. None is more taking than an orange body with peacock and blue jay wings and black hackle legs; but any of the well-known Salmon flies will secure him, as will

the scarlet bodied fly with scarlet ibis and silver pheasant wings, which is so killing to the Black Bass of the lakes.

With the fly, he is to be fished for with the double-handed rod, precisely as the Salmon; and when hooked, though he has not all the artifice and resource of that monarch of the deep, he is hardly inferior to him in agility, strength, and vigour of resistance.

It is singular that more recourse is not had to this mode of taking him, as in waters where the Salmon is not, there is no sport equal to it.

Those who try this method will not, I dare to assert, regret the trial; they must, however, fish from a boat, as the width of the streams which Bass frequent do not permit them to be commanded from the shores, even with the double-handed rod.

Again, the Striped Bass may be caught either with the gorge-hook and the trolling tackle described under the head of Pike fishing, or with the spinning-fish and swivel-traces recommended for taking the Salmon. Almost any small fish will answer for the bait, but the New York shiner, the real smelt, or the atherine—*alias* sand smelt or spearling—especially the latter, will the most readily allure him. This method of fishing, second only to the use of the fly, is the most exciting, as it requires finer tackle, and consequently calls forth far more skill, than the ordinary modes of fishing for him at the bottom.

For boat fishing, a strong ash or hickory, and lance-wood, rod, with patent guides and the new agate funnel-top, which can be procured at Conroy's, and is one of the most perfect improvements of the day, with a Salmon-reel and two hundred yards of silk or grass line, will be found the best; of course, for Salmon

fishing, the hair and silk line takes the precedence of all others. A rod of twelve or fourteen feet will suffice from a boat, but for bank or bridge fishing one of about eighteen feet is preferred by the best fishers.

Comparatively few persons troll for Bass as described above; for, in fact, the great majority, even of our good fishermen, are in some sort pot-anglers, and prefer taking monstrous giants of the water with coarse tackle, to the far greater excitement of skilfully and delicately conquering a moderate-sized fish with the finest tackle. The Striped Bass, it is said, is known to attain the weight of a hundred pounds; but such giants are rare, though up to forty or fifty pounds they are no rarities. The largest fish are taken in deep, rapid tide-ways, such as Hellgate or the Haerlem River, by trolling from the stern of a row-boat with a strong hand-line and a large hook baited with that hideous piscine reptile, or insect rather, the real squid, or with the artificial squid of tin or pewter. A good deal of skill is required for this mode of fishing, but yet more strength than skill, and it is a very wearisome pursuit.

Still more fatiguing is the exercise of squidding for them with the artificial bait in the ocean surfs of the outer beaches, in which the toil of throwing out and dragging in the squid becomes a real labour.

Neither of these methods, any more than taking them on set-lines baited with spearling or tom-cod, as is very successfully practised in the Hudson, do I regard as legitimate or honest fishing; and they are resorted to rather by the professional fisherman than by the amateur for sport.

Nor can I say that I look with much sympathy on those who

fish for them as is the usual practice at Macomb's Dam, King's Bridge, or Belleville Bridge on the Passaic, and similar places, with floats and sinkers and the bottom baits; though I confess that the size and vigour of the fish, when hooked, render this the finest of all the kinds of bait-fishing.

The rule is, to fish as near the bottom as possible, with a sinker light enough to move with the tide. The hook should be large, and I believe the Kirby form is generally preferred to the Limerick. Some anglers recommend the use of double, others of single gut; and some fish with, others without the float; both plans have their own advantages, and probably there is little difference in reality between the two.

In rivers frequented by Shad, the Shad-roe, either fresh, or preserved and potted, as described above in reference to Salmon, is the most killing bait that can be used in the Spring-time, and is especially the favourite bait of the Passaic anglers at the Belleville Bridge and the reefs near Acquackanonck. I have no doubt of its success in the Upper Delaware so high as Milford, where the Bass, there called Rock Fish, is taken of rare excellence. In tide-ways it is obviously useless, since the Shad never spawn in such places, and as animals in a state of nature feed naturally, the Bass never looks for, nor will take, such a bait, except in spots where it abounds naturally.

The Bass may be fished for with success from early in April, sometimes even in March, until late in October and September. On his first appearance, and up to the latter part of June, the shrimp is the best bait; and it should be used with a float, suspended at ten or eleven inches distant from the bottom. From June, thoughout the summer, the shedder crab attracts

the Striped Bass rather than any other bait. A sliding sinker should be used in this instance, which rests on the ground, and allows the crab to move on the bottom. No float is required for this method.

So soon as the season is so far advanced that the shedder has recovered his scaly panoply, which sets his enemies' assaults at defiance, the shrimp again comes into play, and, with the various kinds of small salt-water fishes, constitutes the best river baits.

For boat fishing in the bay, with sinkers—as for the Weak Fish, King Fish, and others, among which the Striped Bass is taken, the soft clam is the favourite appliance; and for this kind of sport, full and neap tides, and a wind off shore, are the best periods.

In killing the Bass, after he is hooked, great skill, great perseverance, and incessant vigilance are necessary. It is a *sine quâ non* to keep him up, frustrating his efforts to rush to the bottom, and to hold him ever in hand, with a taut line, ceding nothing to his wildest efforts, except on absolute compulsion.

Excellent tackle is requisite, and to preserve it excellent, constant attention to it must be had, or all will be in vain. Nothing is more provoking than to lose a fine fish, well played, and perhaps all but killed, owing to some slight imperfection in the gut bottom or the arming of the hooks, which care, before coming to the water's edge, would have easily and surely prevented.

Whether the Striped Bass has ever been killed by the fatal spoon, I know not; but I cannot doubt that it would be found nearly as effective as with its congener, the splendid Black Bass of the St. Lawrence, to which I shall now proceed.

BLACK BASS FISHING

IN THE ST. LAWRENCE.

From the Files of the "Buffalo Commercial" I borrow the following description of the habits, haunts, and modes of taking the Black and Oswego Bass—if different they be, as I believe they are—in the Niagara River. It is by the same distinguished sportsman and sound naturalist to whom I have before alluded in my article on the Perch.

I prefer quoting him to writing of the fish myself; as although not unacquainted with his habits, I have never yet myself enjoyed the pleasure of catching him either with the fly, the spoon, or the shiner:

"The Oswego Bass and Black Bass bear so strong a resemblance to each other, that no one fisherman in ten knows them as distinct entities. In form, colour, weight, and habits, the two are almost perfectly identical; and yet their differences, though minute, are striking and essential. An Oswego Bass, when placed by a Black Bass of the same size, is readily distinguished by his more forked tail, his greater thickness of shoulder, his coarser scales, and, above all, by his mouth, which, when open, is nearly twice as large as that of the Black Bass. In Lake Ontario, the Oswego Bass is abundant, and the Black

Bass comparatively rare. In Lake Erie, the Black Bass greatly predominates, and it may be doubted whether the Oswegonian —like certain citizens of the Ontario shore—is not an interloper in our waters, who has found his way to us from below, through some canal. However this may be, he is certainly right welcome!

"The Black Bass is our chief object of pursuit—his capture is our dearest triumph—his captive form our proudest trophy. When word first comes, in June, that the Black Bass bites in our river, what a stir there is among our anglers! — what questioning as to the when, and the where, and by whom, and with what bait, and the number and size!—what an anxious inquiry after big minnows!—what a raking and scraping of pond-holes for soft lobsters!—what a watching of the skies!—and, if there be no wind, or a zephyr from the south or west, what bright and hopeful faces!—but if the storm rage, or an easterly wind, however gentle, fan our sleeping bay, what rueful countenances!—what half-suppressed repining!—what a woeful spiritless attempting to be busy about our ordinary avocations! And why this commotion? Because this is the very prince of our Game Fishes. His capture is a less easy task, and involves, or is supposed to involve, more science, and to be a truer proof of merit as an angler, than any other tenant of our crystal waters. But—let me whisper in thy ear, my friend!—there is much of fancy in all this. He is a noble fish, and struggles vigorously and most pertinaciously for liberty; but no art nor skill, unattainable by thee, or any one, is requisite to hook or draw him from his element.

"This fish beds in our streams and rivers, and probably,

too, on the bars and shoals of our bay. Numbers run up the larger streams in May, and bite freely at the worm, in the middle and latter part of the month, in the Tonawanda. His appearance is too familiar to need description. His colour varies, though it generally approaches black. I think only the smaller Bass run up the creeks. Those taken in Tonawanda seldom overweigh two or two and a half pounds, and have a greenish hue. In the river they attain a weight of four and four and a half, and even five pounds; and occasionally heavier ones have been taken, weighing even eight pounds. The river fish when fresh from the water is frequently banded, like the Perch, with broad bars of a darker hue, which disappear, however, and fade into the general colour of the fish as he becomes dry. He seldom takes the hook, in the Niagara, until June. He is always fine eating, but is fattest and best in autumn."

He is angled for in the usual way, and with the same arrangement of tackle as the Striped Bass or Salmon; and with some enthusiastic Western sportsmen, is thought to give more amusement than either. But the most active and exciting mode of pursuit is with the trolling rod and boat. We are indebted to a friend who has frequented Lake George, for the following interesting communication:

"This is a game fish, affording the angler the very highest enjoyment. These fishes are taken in various ways. When collected on their feeding grounds, in August and the succeeding fall months, they are sometimes taken in considerable numbers. The usual mode of angling for them at this time, is either with or without a float, and with live bait—a small

fish taken for the purpose, along the lake shores or in brooks. They are exceedingly strong and active—qualities which delight the angler. When first hooked, they run very wild, and almost invariably rise to the surface, and leap one, two, and even three feet in the air, shaking the head violently, evidently with a view to dislodge the fatal hook. Frequently, while making their runs, they will suddenly turn and come with all their power directly towards their enemy, and by thus slacking the line, will succeed in shaking the hook loose; this often happens with inexperienced fishermen, but more rarely with the angler who holds a good reel and winds rapidly. The most beautiful mode of angling for them, is trolling, either with live bait or an artificial fly of large size and gay appearance. The writer has succeeded remarkably well with a fly made on a large-size Limerick hook, such as are used for Striped Bass when fishing with crab bait. The fly is made as follows:—Body of a peacock feather, wings of a scarlet kerseymere and white pigeon feathers; or, the feather stripped from a white goose-quill, and wound round like the hackle, and surmounted with thin strips of scarlet forewings. For trolling pleasantly and comfortably, the angler should provide a moveable seat, which he can place across the gunwale of his boat, in order that he may sit with his back to the oarsman, and facing the stern. Thus he will have full command of his rod and line, and not be sitting in the cramping attitude which the lowness of the seats would cause. He should reel off fifty to sixty, or even one hundred or more feet of line, and in going over shallow reefs of seven or eight feet depth, two hundred feet, as the fish feeding on the reefs usually dart aside as the boat passes, and do not return immediately to

their harbouring spot, which is one reason why those who do not use the reel are not as successful as those who employ it. After a few moments they glide back to their favourite spot, and as the fly comes along, dart at and seize it. A strong tug is felt by the angler, who has only to draw gently, and his prey is fastened. The oarsman rests on his oars, to give the angler full command of his line. The noble fish after one or two runs to right and left suddenly rises and makes his splendid leap, and plunging again seeks the bottom, again rises, and then tries his last experiment of dashing right towards the boat. He struggles long and vigorously, but his strength is at last exhausted, and you trail your unresisting captive to the landing net. I have taken them of various weights, the largest weighing five pounds nine ounces: this was done last summer, 1844, in Lake George. I believe they are sometimes taken much higher in the St. Lawrence River, and upper lakes; but my acquaintance with them is limited to the beautiful lake just mentioned.

"At Sherrill's capital hotel at Caldwell, every facility for enjoying this delightful sport can be had, though the best fishing grounds are down the lake.

"An excellent house is kept by Mr. Garfield, twenty-two miles down the lake, where the best fishing stations for Salmon Trout are situated. There is a good deal of fine ground for the Bass in the neighbourhood.

"About ten miles from Caldwell, there is a place called the Narrows, where there are numerous small islands, with shelving rocky shores, and fine trolling ground.

"Anglers will find good plain accommodation at a house kept

by Mr. Lyman, who is very kind and attentive to his guests, and furnishes baits, guides, &c.

"In trolling for the Black Bass in Lake George, you will frequently strike those of one-half to three-fourths of a pound weight, even with the very large fly which I have described. There is so great a difference, both in shape and colour, between the fish of this size and those of two or more pounds' weight, that a stranger would never take them to be of the same species. These small fish are very similar in shape to the Blue Fish of the salt water, while those of the larger size spread in width as they increase in size, so that a fish of two and a half to three pounds, is of a shape between a Black Fish, or Tautog, and the famous Sheep's-head. In colour they differ also greatly; the small Bass being of a light dull greenish colour, while the larger grow darker as they increase in size, the largest being nearly black on the back, and of a very dark brownish green on the sides. The younger gentry, above described, are not to be despised on account of their size, for when taken with a light Trout-rod, they will be found to be a fine vigorous fish; and when in their temerity they seize the large fly, on feeling the hook, they will, true to their nature, make the leap, in imitation of their sires, thus showing themselves to be game fish. I have known them to leap three times while reeling in the long trolling line, whereas the larger gentry rarely leap more than once."

In addition to this I will only add—for all that is said here is correct and clear—that in the St. Lawrence, among the Thousand Islands, this admirable fish is taken in unequalled numbers, and of unrivalled excellence. That in the Black

River they are likewise very abundant, and rise in it very freely to any gaudy fly. A friend of my own has killed many of this fine Bass with a large red hackle, with a gold tinsel body, and also with a green-tailed grannam. The best fly, however, is decidedly one manufactured by Conroy, after the colours of that described in the above quotation, with a scarlet chenil body, under wings of the red ibis, and upper wings of silver pheasant; this will be found unfailing.

A singular fact, which obviously, though oddly enough, escaped the observation of my friend at Buffalo, is that at the first appearance of the Black Bass at the mouth of the Niagara, say in the latter part of May, the fish all lie around a reef on the Fort Niagara on the American side of the river, not one being ever, at that period, taken on the Canadian reef opposite. After about six weeks' residence, however, they change sides, and cross over, deserting the American shore altogether, and being taken only on the Canadian side.

The New York shiner is there esteemed the best bait, and with it, in last May, an officer and three men in H.M. service, caught in a few hours enough of these fish to load two strong men to their heart's content.

The small Rock Bass of the lakes is taken off the wharfs and docks on all the same waters, from Kingston to Lake Superior, with the minnow or small shiner, though rarely with the fly. It is a good fish, but rarely exceeds a pound in weight.

From the same writer I here quote a few lines concerning the Lake Sheep's-head (*Corvina Oscula*), to which I have alluded before, but which must not be confounded with the Malasheganay, or the Black Sheep's-head (*Corvina Richardsoni*), a con-

generous fish, taken nearly in the same waters, and with the same bait—any, to wit, of the fresh-water molluscas, and, above all, with the cray-fish—which is as excellent as this other is abominable on the table:

"This is a villain in general estimation—the pest of the fisher for Bass—a fish that putteth the cook, who would render him acceptable at table, in a quandary—from which, I am sorry to say, I cannot relieve her, though she be at her wits' end.

"He is generally brown, grey, or reddish above, and of a dead, impure white below. His head is large, and his body is flattened laterally, though the frying-pan rejecteth him. His ordinary weight is two or three pounds, though he sometimes weighs five and even six. His food, his haunts, his habits, are similar to those of the Black Bass, whom he ever accompanieth, as though he were intended by nature as a foil to set off the merits of that jewel of the flood. He is despised, yea, detested, by the choleric angler, who pulls him out, and then dasheth him upon the stones.

"The Sheep's-head of the sea is a lusty, crafty fish, bepraised alike by the fisherman and the epicure. At the turn of the tide he takes the whole soft clam on your hook at a mouthful, and chews it, shell and all, and pulls like a Salmon as you draw him in; and his radiant, deep and broad-barred sides—as he flaps about on the sands of that low islet in the great south bay of Long Island, to which you have just hauled him—how brilliantly they show, and make you think of the dying Dolphin, and of old Arion! And when he reposes at the head of the table—fit place for him—beautiful, though boiled, how heartfelt

is the homage he receives from all around! Truly, it is libel on him to call by the same name this Pariah of the lakes.

"And yet our fish is vigorous, and not altogether destitute of beauty, to the eye at least of those who know him not. Is it not chronicled, that at Black-Rock, a strange angler once bartered away two noble Bass for two large Sheep's-heads, which, for the nonce, were called White Bass? 'The freckled toad, ugly and venomous, wears yet a precious jewel in his head'—and our fish, in his clumsy cranium, wears two small loose bones, serrate and white and polished, which must have some use to him, some wondrous adaptation to his mode of life, which, when unfolded, will prove that he is not unregarded by Him who has made the great whales and the fishes of the sea.

"His mouth is paved with large, flat, rough bones, or teeth, like those of the sea fishes that root up and devour the hardest testaceæ; and I have little doubt but that the naturalist who watches him narrowly, will one of these days detect him crushing and consuming the Uni and Anadontas—the fresh clams of our muddy flats and sandy bars.

"He bites at the worm, the minnow, the chub, the lobster, and makes good play with the line, though he gives in more quickly than the Bass. An experienced angler can generally distinguish his bite and his resistance—but the most knowing ones are sometimes taken in, and think him Bass until he is fairly brought to view.

"When you have caught him, let any one who will accept him have him; and take to thyself no merit for the gift. His meat is more like leather than fish or flesh. It is a common saying that the more you cook him the tougher he becomes;

and I am not aware that he is ever eaten raw. But some people do eat him, and profess to like him; they must have stupendous powers of mastication and digestion. I have been told that, roasted whole in the ashes, just as he comes from the water, he is savoury and tender—*sed credat Judæus!* I once did eat him, prepared as follows:—He was split through the back, put upon the gridiron, there grilled enough to cook a side of pork; his flesh was removed from the skin, boned, chopped up into dice, probably with a cleaver, and stewed with milk, butter, pepper and salt. I must say that, though it was meat of great tenacity, and might well be likened unto India-rubber, it had much sweetness."

EEL FISHING AND TRIMMERS.

With regard to the Eel, if I consulted my own tastes only, I should remain in utter silence, holding them totally below the contempt of the angler, although *en matelotte*, or *à la tartare*, on the table they certainly are not despicable; there are, however, those who probably think otherwise, and who would regard it as an omission, perhaps a slight, if I were to pass over their favourite wriggling reptile. I therefore quote from Hofland's "British Angler" the following, which comprises all that can be said on the subject, and is no less applicable to the Eel of America, than to that of Great Britain:

"To angle for Eels, use a strong gut line, with a light float, and No. 9 hook, and bait with a large red worm; or use a No. 6 hook, and bait with a marsh-worm, and let your bait touch the bottom; but the most alluring bait I know of for an Eel is Salmon-roe; and when fishing for Trout with this bait, the angler will frequently take Eels, much to his annoyance, if, like myself, he detests their dirty slime, and serpent-like writhings. I shall say nothing of bobbing for Eels, or of sniggling, as they are practices below the angler; but as the largest Eels are caught by night-lines, and this method is a necessary resort for the supply of the table, I shall give the instructions of Daniel on this point.

"'It is of little consequence where they—*i. e.*, night-lines—are laid, as they will succeed in streams, when the Eels are in search of food, as well as in the still, deep holes of rivers; and they will take frogs, black snails, worms, roach, dace, gudgeons, minnows—which two last are the best—loaches, bleaks, and millers' thumbs;' a sufficient quantity of links, of twelve hairs, should be doubled—or use twisted gut, and a hook tied to each link; these are to be noosed, at proper distances, to a piece of cord fifteen feet long; bait the hooks by making an incision with the baiting-needle under the shoulder, and thrusting it out at the middle of the tail, drawing the link after it; the point of the hook should be upright towards the back of the bait-fish; fasten one end to the bank, or a stub, and cast the other into the water, but not to the extent of the line, as Eels will run a little before the gorge; the lines should be taken up early in the morning; such of the lines as have Eels at them will be drawn very tight. Dark nights in July, August, and September, are the best for this kind of fishing.

"Hooks proper for this method of taking Eels may be purchased, either double or single, and are called Eel-hooks. When a double hook is used, I should say the following mode of baiting is better than Mr. Daniel's. Without a baiting-needle, enter the point at the fish's mouth, and bring it out at the tail, letting the two hooks lie close to the mouth of the bait, as described in baiting the gorge-hook for trolling.

"Trimmers, baited with a live gudgeon, are sure to be taken by Eels. The wire to which hooks are fixed should be strong and tempered, as the Eel struggles hard to free himself. Very large Eels are caught in the lakes of Cumberland and West-

morcland, by trimmers, baited with small trout or perch—there called bass—with the back fin cut off. On Derwentwater—Keswick Lake—it is a common practice for parties to engage a fisherman, who provides twenty or thirty trimmers; the tops being painted bright red and white, that they may be seen at a distance. The party should be in the boat by four o'clock, A.M., at the latest; the fisherman then baits the trimmers with live bass, small trout, or minnows, and places them at equal distances across the lake, spreading to the extent of from half to three-quarters of a mile; and if there are two or three boats belonging to the party, and the Pike and Eels are on the feed, the great diversion is to see the trimmers carried off by fish, in different directions at the same time, when all becomes animation and exertion in the different boats; all rowing towards the trimmers, and eager to seize on their prey; and very large Pike and Eels are often caught in this manner."

SHOAL-WATER SEA FISHING.

This sport, which is pursued with great eagerness by many of our city anglers, has for its scene the various channels, bays, shoals, reefs and mud-flats of our harbours, the great land-locked lagoons along our coasts, and many places in the East River, and Long Island, as well as in the estuaries of all the larger rivers from the capes of the Chesapeake to Massachusetts Bay.

It is pursued in boats, which are rowed from spot to spot, and anchored over the various reefs and shoals, or in the vicinity of sunken reefs, about which these fish are supposed to abound, according to the state and variation of the tides. The fish usually taken are the Squeteaque or Weak Fish, the Barb or King Fish, the Tautog or Black Fish, the Striped Bass, the Sea Bass occasionally, the Sheep's-head, the Big Porgee, and sometimes the Drum.

For the Sea Bass, however, and the Porgee, longer excursions are generally necessary, as the best fishing for these is on the outer sea-banks, in the Atlantic, whither steamers and sloops occasionally proceed with companies for a day's amusement. In these, however, there is most frequently more fun than fishing, although sometimes very good sport is had, and greater quantities of fish are taken.

For Sheep's-head, again, boats are generally fitted out expressly, as this large powerful fish and heavy biter requires stronger tackle than is needed in the capture of any of the other species.

The ordinary booty, therefore, of the shoal-water sea-angler, is confined, nine times out of ten, to the Weak Fish, the King Fish, the Striped Bass, and sometimes the Black Fish, although this latter differs somewhat from the others in his accustomed haunts; and for these, all of which may be taken with the same tackle, and nearly with the same baits, he constantly goes prepared.

The best localities for this sport are so numerous, and so well known to the guides and professional fishermen of every neighbourhood, that it is needless to enter into a particular narrative of their whereabouts, since it is very little likely that a stranger would attempt to find them unassisted by a guide, and to the practised and inexperienced angler of each region they are of course well known.

THE WEAK FISH.

The Weak Fish is a very abundant species in the vicinity of New York, and is angled for with much success in almost all parts of the inner bay. The name is said to be derived from the weak mouth of the fish, which is so soft that it very frequently is torn by the hook, and so allows the fish to escape. It pulls fairly upon the hook, and when struck of a considerable size, gives considerable play to the angler before he can be secured.

Many persons fish for this species, and the others which haunt the same grounds, with the drop-line, but this is a poor and unexciting sport, as compared with the use of the rod and reel.

The best rod is a moderately stiff general fishing-rod, with a reel, and from one hundred to one hundred and fifty yards of flax or hemp line; a No. 1 Kirby hook will probably be found, on the whole, the most successful; and the most killing baits are shrimp, shedder-crabs, or clams. The Weak Fish occasionally runs up to eight or nine pounds' weight, but the general average does not probably exceed two. When quite fresh out of the water, the Squeteaque is a very tolerable fish, not a little resembling the Trout in flavour, but it very soon

becomes soft and flaccid. It is by no means so game or so good a fish, when taken, as the Striped Bass or the King Fish, yet it is not without many votaries who pursue it with ardour.

Immediately around the Battery, and even from the Castle Garden bridge, good sport is frequently had with this fish, as also on the flats off Communipaw, in Buttermilk Channel, off the Owl's-Head, as well as at Bergen Point, Elizabethtown Point, and many other places, both in the Kills, and in Newark Bay. It is said that the afternoon tides are the most favourable for taking the Squeteaque, until a short time before sunset, but that so soon as the peculiar drumming or croaking sound, which is ascribed to this fish, is heard, it is useless to fish longer, as he then ceases to bite.

THE BARB, OR KING FISH.

This is, in all respects, a better and finer fish, both for the captor or the epicure, than the last.

He is with us, at New York, a summer fish of passage, and is, it is much to be lamented, becoming yearly more and more rare.

In Mr. Brown's "American Angler's Guide," it is stated that, "As a game fish, he is considered as giving more real sport than the Trout, Bass, or Salmon. His name and whereabouts has only to be whispered to the New York angler, and he is off after sport that he has perhaps anticipated for years."

Now, to this I must record my positive dissent; for though it may be, and is, very true that the King Fish is a great favourite with the New York angler, that he is a game fish, biting briskly in those seasons when he is found abundantly in these waters, and offering resistance both longer and stronger than any other small salt-water fish—still no one—except those jolly old codgers who consider patience demonstrated by sitting still in an anchored boat, and comfort evidenced by the consolation of the inner-man with beef sandwiches and cold brandy-and-water—would dream of considering it better sport to sit for hours, between Black Tom and the Jersey shore, with no hope

save that of hooking a little fish, which rarely exceeds two pounds in weight, with a bottom bait and strong ground tackle, than to hook a twenty-pound Salmon with a fly on the surface, and to play him for an hour before he can be gaffed.

The one sport requires luck and patience,—the other skill, hardihood, endurance, courage, long experience, quick eye, stout heart, fleet foot, and ready hand. How, then, shall these sports be compared?

I do not desire, however, to discredit the King Fish; nor does he in anywise deserve it, as, both for *durante vitâ* and *post-mortem* excellence, he deserves all honour.

He is to be caught most easily with the rod and tackle before described, under the head of the Squeteaque, or Weak Fish, except that a smaller hook should be used, the mouth of the King Fish being small. The best bait is the shedder-crab.

In the former portion of this work, devoted to the consideration of the natural history of fishes, I have quoted an anecdote, published in the New York Commercial Advertiser, of July 6, 1827, recording the capture of *four hundred and twenty-two* King Fish, by a boy and a man, in the space of six hours, in Jamaica bay, off Rockaway; and I find it stated in the "American Angler's Guide," that twenty or thirty are often taken in a single tide.

The first feat is unsurpassed, and probably never will be equalled; the second is of most rare occurrence, so much so that now-a-days the angler justly holds himself favoured by the marine deities, who kills his half-dozen King Fish in a day.

All this, however, may be changed at any moment; for the comings and goings of all migratory animals are more or less—and those of migratory fishes most—irregular.

Their visits are like those of angels, few and far between. The King Fish, the Lafayette, the Blue Fish, nay, even those scaly customers, the Prawn and the Lobster, will swarm this year, disappear entirely the next, and after an absence, longer, perhaps, than Jacob's double courtship, will again gladden the hearts of their lovers by returning in numbers innumerable.

In New York harbour, the flats from Bergen Point to Jersey City, within the fortified islands, and the big rock called Black Tom, and opposite Communipaw, are the best waters for the King Fish. But in the Passaic Bay, and off Elizabethtown Point, and also in the lagoons of Long Island, they are taken often in great numbers.

May they soon return to us as thickly as of yore, and remain as long as it suiteth them! They shall be welcome.

THE SEA BASS.

The Sea Bass is another gentleman among his finny comrades, and he is sometimes taken by the rod-fisher while angling for the Squeteaque, or King Fish. He is, however, difficult so to kill, and is comparatively rare in the inner waters.

On the sea-banks without Sandy Hook, in the lower bay, and in the Sound, he is very abundant, and affords great sport to those who are satisfied with quick biting and continual hauling in.

Both for the Bass and the Big Porgee, stout hempen or flaxen drop-lines are the most successful, varying from ten to twenty-five fathoms in length, fitted with a single sinker of a pound weight, and three or four hooks on separate snoods, eighteen inches asunder, of various sizes, for various species of fish.

For Porgees, the No. 3 round Black Fish hook is preferred; for Sea Bass, Nos. 1 or 2 Kirby. The only bait is the clam, and it is desirable to salt him for a day, which, hardening the flesh, renders it more difficult for the fish to abstract him.

No skill is required for this mode of fishing, except that of keeping one's wits about him, striking very sharply the instant

he feels a bite, and hauling in rapidly with a taut line; for, if a slack occurs, the fish will often disengage themselves.

Many people are very fond of this sport, but I hold it, after all, but heavy work, not the less so for being considerably laborious, and for the fact that hauling in the small, cutting line, hand over hand, and the salt water, are apt to make the fingers exceeding sore, if gloveless; and to use gloves in angling, would be something like donning the upper Benjamin with fox-hounds.

THE TAUTOG, OR BLACK FISH.

Of him Dr. Mitchil, not unsagely nor unpleasantly, discourseth after this fashion. The facts of natural history, as herein recorded, are worthy of all confidence; nor are the maxims worthless to the angler:—

"The Black Fish abounds in the vicinity of Long Island, and is a stationary inhabitant of the salt water. He never visits the rivers, like Salmon or Sturgeon; nor, on the other hand, deserts his dwelling-place as they do. He is fond of rocks, reefs, and rough bottoms. He is taken through the whole course of Long Island Sound, Fisher's Island Sound, and in the neighbourhood of Rhode Island. The Tautog was not originally known in Massachusetts Bay; but within a few years he has been carried beyond Cape Cod, and has multiplied so abundantly, that the Boston market has now a full supply, without the necessity of importing from Newport and Providence. The Black Fish, however, does not confine himself to rough bottoms; for he is also caught in the southern bays of Long Island, and on the banks of the ocean off Sandy Hook. He is considered, by the New Yorkers, as a very fine fish for the table. He grows to the weight of ten or twelve pounds, and even more; but is a fish of a good size, that equals two or three.

"He may be kept for a long time in ponds or cars; and fed, and even fatted there. When the cold of winter benumbs him, he refuses to eat any more, and a membrane is observed to form over the vent, and close it. He begins to regain appetite with the return of warmth in the spring. The blossoming of the dogwood (*cornus florida*), early in April, is understood to denote the time of baiting Black Fish. As soon as these flowers unfold, the fishermen proceed with their hooks and lines to the favourite places. If there is no dogwood, a judgment is derived from the vegetation of the chestnut tree (*castanea vesca*). The season of baiting is reckoned very favourable until the increasing warmth of the season brings food enough to fill their stomachs, and they thereupon afford less pastime to the sportsman, and less profit to the professor. The people express this sentiment in these coarse rhymes:—

> "'When chestnut leaves are as big as thumb nail
> Then bite Black Fish without fail;
> But when chestnut leaves are as long as a span,
> Then catch Black Fish if you can.'

"The common bait for Black Fish is the soft clam (*mya*). The soldier-crab, or fiddler (*ocypoda*), will frequently tempt him when he refuses to taste the other. And he snaps very readily at the large finny worm of the salt-water beaches (*nereis*), when used on a hook for him.

"Some persons, who live contiguous to the shores where are situated the rocks frequented by Tautog, invite the fish there by baiting. By this is meant the throwing overboard broken clams or crabs, to induce the Black Fish to renew their visits, and fine sport is procured.

"Rocky shores and bottoms are the haunts of Black Fish. Long experience is required to find all these places of resort. Nice observations on the landmarks, in different directions, are requisite to enable a fishing party to anchor on the proper spot. When, for example, a certain rock and tree range one way, with a barn window appearing over a headland the other way, the boat being at the point where two such lines intersect each other, is exactly over some famous rendezvous. To insure success on such expectation, it is proper to have a pilot along, well versed in all the local and minute knowledge. According to the number and distance of the rocks and reefs visited, will be the time consumed, from the duration of a few hours to a long summer's day. An opinion prevails, that the Black Fish can hear very well; and, for fear of scaring them away, the greatest stillness is observed. He is a strong fish, and pulls well for one of his weight and size.

"At some places Black Fish bite best upon the flood; in others, they are voracious during the ebb. Thunder accompanying a shower, is an indication that no more of them can be caught. The appearance of a porpoise infallibly puts an end to sport. Curious stories are told of fish in the wells and ponds, floating in their native element, having been found dead, after sharp and repeated flashes of lightning. Dull weather, with an easterly wind, is generally the omen of ill luck. The exploits performed in fishing for Tautog are recounted, occasionally, with remarkable glee; and they afford a never-failing theme of entertainment to those who are engaged in that sort of adventure. Though the hand-line is generally used, the rod is sometimes employed to great advantage. The Black Fish is

remarkable for retaining life a long time after he is taken out of water. He sometimes swims over even ground, and is caught in seans."

A stout trolling-rod, with a strong flaxen line, and a reel, are the best implements. The hooks should be those known universally as the Black Fish hook, of various sizes, according to the angler's taste, ranging from three to ten. These should be armed—two being used, which is the proper number—on hook links of trebly-twisted gut, respectively, of twelve and fifteen inches, which links should be securely fastened to a small brass ring. The ring is to be hooped to the end of the line to which the sinker is appended.

This is the best arrangement of the hooks for all salt-water shoal bait-fishing.

The Black Fish is entirely a bottom fish, and is caught everywhere within his geographical range, in whirls and eddies, in the close vicinity of rocks and reefs.

Robin's Reef, at the entrance of the Kills, is a favourite feeding ground; and some years since I had rare sport daily for many weeks, about the hull of the wrecked packet-ship, Henri Quatre, below the Narrows.

The rocks off the well-known watering house, the Sachem's Head, on the Sound, and many other rocks in the Bays and Sound of Long Island, are of equal reputation.

He must be struck sharply, and pulled up without a moment's quarter.

He is better in the pan than on the hook, and better on the table than in the pan. How you may cook him you shall learn hereafter.

THE SHEEP'S-HEAD.

This capital fish, which holds the same repute in America which is held by the Turbot in Europe, is sometimes hooked by the rod-fisher while angling for the Barb, Squeteaque, or Striped Bass; but when this occurs, he generally beats his retreat successfully, carrying off with him bait, line, bottom, and hooks together.

Still he is sometimes mastered by delicate skill and judicious administration of the reel, but then only by the best of tackle, manipulated by the best of fishermen. Drop-lines of strong hempen cord, a quarter of an inch thick, and two hundred yards long, with a heavy sinker, and a large stout Black Fish hook, will, however, pretty certainly bring him home.

He frequents the vicinity of rocks, and loves to bite at the small rock-crab, and the soft-shelled clam.

The best way is to bait with the clam whole and unbroken, burying the whole hook nearly to the arming in the neck of the clam. By doing this, the incessant and vexatious nibbling of the small fish is avoided; and the shell of the clam is a mere nothing to the great paved round teeth, which line the palate of this strong voracious fish.

Where small fish are not frequent, the clams may be put on open, with success.

The Sheep's-head is becoming scarce in the harbour of New York, and those brought into the city come mostly from the south bays of Long Island.

No fish is better on the table, or more valued.

He is the highest prize of the salt-water angler, and the idol of the epicure's adoration.

Let him enjoy his reputation, he deserves it; perhaps the knowledge of his posthumous honours may be a consolation to him in his death-pang.

THE DRUM.

Neither to catch nor to cook the Drum, will I teach you, gentle reader mine, for he is not worth the hook which he will probably carry away, if you strike him, nor the salt which you might waste in seasoning him.

Unless in his vast size and great power, he has no merit, and in these he is surpassed by the Shark, the Porpoise, and the Whale, for which I should about as soon think of angling.

BLUE FISH FISHING.

A GENERAL favourite from his southern to his extreme northern limit, this great Mackerel is everywhere an object of pursuit, and deserves to be so, both for the fun of taking and the pleasure of eating him. When fresh from the water he is superlative. A very bold and daring biter, he is caught in great numbers in swift tide-ways, eddies, and inlet mouths. In the Sound, in the Long Island South Bay channels, in the inlets of the Jersey beaches, from June to August, he affords rare sport.

Sail for him in a large cat-rigged boat, and the fresher the breeze, and the brisker the sea, the better. In large schulls he swims near the surface, leaping at every living thing which crosses his track of devastation.

When you have the luck to strike a schull, stick to it perseveringly, crossing it tack and tack, as fast as you can go about in the direction of its course; and if the gods of the deep look with benignance on your labours, you shall kill a hundred at the least, in a tide.

Thus fish for him: To a stout cotton line of a hundred yards, affix a squid of bright tin, or bone armed with a good-sized Kirby hook, with a strong gimp hook-link. Made fast the end

of your line to a cleet in the stern of the boat, then whirl out the squid to the whole length of your line, and play it with both hands alternately. The fish will strike itself, and is to be hauled in with a regular even pull, never jerked, nor yet slacked for an instant, for if it be, the fish will disengage himself almost certainly.

When you tack your boat, if the water be shoal, haul in your line, else shall you foul it in the sea-weeds.

When you have hooked your fish, raise your squid with the hook uppermost, and a slight shake shall cast him into the bottom of the boat.

Babylon, Islip, and Quogue, on Long Island, in Fire Island inlet, and Pine inlet, Shrewsbury, Squam-Beach, and Barnegat, in New Jersey, the estuaries of the rivers in Connecticut, and the tide-ways in Boston harbour, are all favourite grounds for Blue fishing.

To conclude: there is no pleasanter summer day's amusement than a merry cruise after the Blue Fish, no pleasanter close to it than the clam-bake, the chowder, and the broiled Blue Fish, lubricated with champagne, learnedly *frappée*, and temperately taken, no unpleasant medicine. What adds most to the zest of such a day, is the presence of the charming sex, this being one of the few sports of field or flood in which they can femininely, and therefore fittingly, participate. For the rest, you *may* take Blue Fish, say the philosophers, of thirty pounds' weight, though I doubt it. Of four and five pounds you *shall* catch him surely; if of eight, rejoice; if of ten, sing pæans,—for that is a triumph.

DEEP SEA FISHING.

The Cod, the Haddock, the Whiting, the Hake, the Halibut, and the Flounder, may be caught everywhere north of Massachusetts; and from Boston to the eastward, parties of pleasure are made constantly to take them. On the Great Banks they are most abundant, but in Boston Bay great sport is not uncommon, nor is it unusual for a single boat to bring in its fifteen or twenty quintals of these fine fish.

The whole sport consists in the frequency of the biting, and the size of the fish, which, for the most part, varies from ten to fifteen pounds; for though they are sharp and voracious biters, they require no play when hooked, offering only an inert resistance, and a dead heavy pull.

Fifty yards of stout hempen line, two small-sized Cod-hooks, baited with the mud-clam, the menhaden, or where it can be procured, the capelin, and a pound sinker, is all your apparatus.

With this, in any eastern water, you may rest assured of returning home with a boat-load of fish, a set of very weary limbs, a pair of very sore hands, and an enormous appetite, of which, *me judice*, the first and the last, alone are desirable.

If you be content with these, fair or gentle reader, go out for deep-sea fishing when and where you will, provided you ask me

to follow you no farther; for here, once more we must part. Ere long, if the fates—and the booksellers—be propitious, I trust to meet again, with undiminished satisfaction, each of us with the other.

And so fare ye well, who have accompanied me so far on my rambling way; and all your pleasures, as you *would* have them, be both long and lasting; and all your pains, as ye *must* have them, being mortal men, brief and transitory; and so may fair fortunes be about ye, and kind thoughts toward FRANK FORESTER.

APPENDIX A.

THE ANGLER'S APPARATUS.

From Hofland's "British Angler's Manual."

It is impossible to become a successful angler, without such a complete and well-arranged assortment of tackle as will enable you to be prepared for all times, seasons, and circumstances; and a true brother of the craft will find much to amuse him in the exercise of his ingenuity in making and repairing lines, flies, &c., and in the orderly disposition of the materials of his art—of which the following is a list:

Rods for Salmon fishing, trolling, spinning the minnow and bleak, fly-fishing and angling at the bottom.

Lines of hair, silkworm gut, Indian weed, plaited silk and hair, and patent line for trolling.

Winches or reels for running-tackle.

Hooks for trolling, on wire or gimp, for the gorge, the snap, &c.

Bleak and minnow tackle, and baiting needles, of various sizes.

Hooks tied on gut, from No. 4 to No. 12.

Hooks tied on hair, from No. 10 to No. 13.

Loose hooks of all sizes.

Paternosters for Perch fishing.

Shoemakers' wax and sewing-silk.

Floats of various sizes, and caps for floats.

Split shots and plummets for taking the depths of the water.

Disgorger, clearing ring, and drag.

Landing-net, a gaff, and kettle for live bait.

Gentle-box, and bags for worms.

A fishing-basket, creel, or game pouch.
A pair of pliers, a pair of scissors, and a penknife.
A book of artificial flies.
A book of general tackle.

RODS.

Choice rods are of the utmost consequence to the angler's success, and various instructions have been given by different authors for selecting proper kinds of wood for the purpose, and the method of making them; but as excellent rods of every description are now to be purchased in almost every part of the United Kingdom, I shall recommend such as will be generally useful, and may be procured without difficulty at any of the fishing-tackle shops in London.

In choosing a rod, be careful to examine if the joints fit securely, if it be perfectly straight when put together, and if it spring equally in all its parts, from the butt to the top, when bent.

That which is commonly termed a "general rod" will be found most useful to the traveller who has not an opportunity of carrying more than one with him at a time, it being so contrived that it may be used either for fly-fishing, trolling, or bottom fishing, as the butt of the rod is bored, and contains several spare tops, i. e., one for the fly, one for spinning the minnow, one for the float, and another for trolling—the whole being conveniently packed up in a canvas bag.

Although this kind of rod will be found highly serviceable on many occasions, I would by no means recommend the use of it when you have an opportunity of employing separate and appropriate rods for the different kinds of angling. The rods used exclusively for fly-fishing should be as light as possible, consistent with strength, and if for throwing with one hand, not more than from twelve to fourteen feet long, and if with both hands not more than from sixteen to eighteen feet. Indeed, a rod shorter than either of these would be found very convenient in a narrow, closely-wooded stream, where it is frequently necessary to force your fly with a short line under overhanging bushes.

I am acquainted with some excellent anglers in the north of England, who cannot be persuaded to use any other fly-rod than one composed of two pieces only, and sliced in the middle; but this is incon-

venient to carry, and the jointed rods are now brought to such perfection, that I feel assured they will answer every purpose of the spliced rods, besides being much more portable. The Irish fly-rods are screwed together at each joint, and are much more elastic than the English rods.

THE TROLLING ROD

Should be very strong, and not less than twelve or more than sixteen feet in length, with large rings upon it, that the line may run freely.

The rod for spinning a minnow or bleak should be of bamboo cane, and from eighteen to twenty feet long, with a tolerable stiff top; the rings should be placed at a moderate distance from each other, and be of the middle size.

The *barbed rod*, for angling with the ledger-bait, should have a stiff top, and be about eleven or twelve feet in length; but for float-fishing it must be much lighter and something longer.

The rod for Roach and Dace should be of bamboo cane, and, if for bank-fishing, from eighteen to twenty feet long; but if for angling from a punt, not more than eleven or twelve feet. It must be very light, perfectly taper, and of a proper degree of elasticity, as the angler's success in Roach and Dace fishing will depend upon his dexterity and quickness in striking when he has a bite. Many anglers never fish without running-tackle, that they may be always prepared to encounter a large fish; but they must not hope to meet with the same sport in Roach and Dace fishing as those do who use a light rod without rings, and a short line, when the chance of striking your fish is much more certain.

LINES.

The best lines for running-tackle are composed of silk and hair, of different degrees of strength and thickness, according to the purpose for which they are intended. For Salmon fishing, a strong winch or pirn, large enough to contain from eighty to one hundred yards of line, is requisite, and for Trout a brass reel, containing from thirty to forty yards of line, gradually tapering to a few hairs at the end, where a foot-link of gut containing the flies is to be fixed.

Silkworm gut-lines are from two to four yards, and are used as lengths to be added to the line on the reel, either for fly or bottom-fishing.

Lines for trolling are of several kinds, some of twisted silk, and others of silk and hair, but that sold by the tackle-makers, called patent trolling-line is in most general use. A strong reel and from forty to sixty yards of line are requisite.

Indian weed is a good material for bottom-tackle, but inferior to the silkworm gut.

Eel-lines, night-lines, and trimmers, may be purchased ready fitted up.

A winch, or reel, is used for running-tackle, and is generally made of brass, but I have seen them in Scotland made of wood, where they are called pirns; the multiplying reel was formerly much used, but from its liability to be out of order, a plain reel, without a stop, is now generally preferred. Reels are of various sizes, containing from twenty to one hundred yards of line.

Bleak and minnow tackle are of endless variety in form and contrivance, almost every experienced angler having his own peculiar plan.

The paternoster is a line used for Perch fishing, made of strong gut, and should be connected with a running-line by a fine steel swivel. It contains three hooks, the size Nos. 7, 8, or 9, placed at equal distances from each other; the first near the bottom, where a small plummet of lead is fixed to sink the line, and the others each from eighteen inches to two feet apart. The hooks are so contrived by swivels as to revolve round the line, and thereby give play to the live minnows with which they are to be baited.

FLOATS.

Much care and judgment are required in adapting your float to the various streams or waters in which you angle. A deep and rapid river will require a float that will carry from sixteen to twenty of No. 4 shot. If the stream be deep and the current gentle, a float carrying one-half that number of shot will be sufficiently heavy, and when the water is perfectly still, a very light quill-float, carrying two of No. 6 shot, should be used; and I may remark here, that the smaller your float, the fewer

the number of shot, and the finer your bottom-tackle, the greater will be your success.

The tip-capped float is the best for pond-fishing and for gentle streams, as the line is confined at each end of the float by a cap, which enables you to strike at a fish with greater precision than with a plugged float, which has a wire ring at the bottom for the line to run through.

In shotting the line, I prefer a number of small shot to a few large ones, as they make less disturbance in the water.

Your line must be shotted till not more than the cap of your float is seen above the water, unless it should be very rough from wind or a rapid current, in which case something more of the float must swim above water.

The porcupine quill is a favourite float with some anglers, but for a moderate stream I prefer a swan's quill.

THE LANDING-NET AND GAFF.

The landing-net may be purchased so contrived as to unscrew from a socket in the handle—which should be four or five feet long—and a gaff or hook for landing Salmon, Pike, or large Trout, may also be bought to screw into the same socket, and both the net and gaff may be carried in your basket or creel till you reach the river side.

APPENDIX B.

THE FLY-FISHER'S APPARATUS.

From Hofland's "British Anglers' Manual."

A COMPLETE fly-fisher will make his own flies, and will find much amusement in the practice of this delicate art. It will be necessary that he should provide himself with the following materials, to enable him to imitate the flies described hereafter.

HOOKS.

London, Kirby-sneck, and Limerick hooks, of all sizes. Of these, the Limerick hook is in the greatest general estimation; but in the north of England, the Kirby-sneck hook is preferred for small hackle flies.

FEATHERS.

Cocks' and hens' hackles, of all colours; those chiefly in use are red, ginger, coch-a-bondu, black, dun, olive, grizzle, and white; the latter for dying yellow, &c.

Peacock's herl, coppery coloured, green and brown.

Black ostrich's herl.

Gallino fowls' spotted feathers.

The feathers of the turkey, the grouse, ptarmigan, pheasant—cock and hen—woodcock, snipe, dotteril, landrail, starling, golden plover or peewit, wild mallard, bustard, sea swallow, wren, jay, blackbird, throstle, blue pigeon, argus and silver pheasant.

Water-rat's fur, mole's fur, and hare's fur.

Mohair, dyed, of all colours.

Fine French sewing-silk, of all colours.

Flos silk, of all colours.

German wool, of all colours.

Gold and silver twist.

Silk twist, cobblers' and bees-wax.

A pair of pliers, a pair of fine-pointed scissors, a small hand-slide vice, and a fine-pointed strong dubbing needle.

Silkworm gut, from the finest to the strongest, and Salmon gut, single and twisted.

Lengths of the white and sorrel hairs of stallions' tails.

APPENDIX C.

HOW TO COOK FISH.—THE SALMON.

Me judice, the king of fishes, is the best plain boiled. His richness is sufficient, his flavour so excellent, that, so far from being improved, his natural qualities are destroyed and overpowered by anything of artificial condiment.

MY OWN RECEIPT FOR BOILING SALMON.

If you are ever so lucky as to catch a Salmon, where incontinently you can proceed to cook him, that is to say, in the wilderness, within ten yards of the door of your shantee, with the fire burning and the pot boiling—good!

Stun him at once by a heavy blow on the head; crimp him by a succession of cuts on each side, through the muscle, quite down to the back-bone, with a very sharp knife, in slashes parallel to the gill-cover. Then place him for ten minutes in a cold spring, or under the jet of a water-fall. In the meantime, keep your pot boiling, nay, but screeching with intense heat, filled with brine strong enough to bear an egg. Therein immerse him, having cut out the gills, opened the belly, and washed the inside, and boil him at the rate of seven minutes and a half to the pound; dish him, and, serving him with no sauce save a tureenful of the water in which he has been boiled, proceed to eat him, with no other condiment than a little salt and the slightest squeeze of a lemon. I do not object to cucumber sliced very fine, with a dressing of oil,

three tablespoons to one of vinegar, salt, and black pepper *quantum suff.*; but I regard green peas, or any other vegetable, with this grand fish, as a cockney abomination.

SOYER'S RECEIPT—SALMON AU NATUREL.

Clean and prepare as before; but, if he be not fresh enough to crimp, scale him, and proceed as follows:

"Put your fish in cold water, using a pound of salt to every six quarts of water; let it be well-covered with water, and set it over a moderate fire; when it begins to simmer, set it on the side of the fire. If the fish weighs four pounds, let it simmer half-an-hour—if eight pounds, three-quarters of an hour, and so on in proportion; dish it on a napkin, and serve lobster or shrimp sauce in a boat."

SOYER'S LOBSTER SAUCE FOR SALMON.

Put twelve tablespoonfuls of melted butter into a stew-pan; cut a middling-sized hen-lobster-butter into dice, make a quarter of a pound of lobster-butter with the spawn, thus; Take out the spawn and pound it well in a mortar, then add a quarter of a pound of fresh butter, mix them well together, then rub it through a hair sieve; when the melted butter is upon the point of boiling, add the lobster-butter, stir the sauce round over the fire, until the butter is melted; season with a little essence of anchovy, the juice of half a lemon, and a quarter of a teaspoonful of cayenne; pass it through a cannie into another stew-pan, then add the flesh of the lobster. When hot, it is ready to serve where directed. This sauce must be quite red; if not red in the lobster, use live spawn.

SOYER'S SHRIMP SAUCE.

Make the melted butter as for the last, but finish with the essence of shrimps, and serve half-a-pint of pickled shrimps in the boat with it. If no essence of shrimps, the anchovy sauce may be served with shrimps in it as a substitute, if no essence can be had.

SALMON À LA BEYROUT.

Broil two slices of Salmon, in oiled paper, over a moderate fire; when they are done, peel the skin from the edge, and lay them on a dish without a napkin; have ready the following sauce: Put one tablespoonful of chopped onions in a stew-pan, with one ditto of Chili vinegar, one of common vinegar, two ditto of plaitiry sauce, two ditto of mushroon catsup, and twenty tablespoonfuls of melted butter; let it reduce till it adheres to the back of the spoon, then add two tablespoonfuls of essence of anchovy, and a small quantity of sugar, pour it over the fish, and serve it hot.

HOW TO COOK TROUT.

MY OWN METHOD.

This is the method of the woods, and in the woods I learnt it; but having learned, I practise it at home, considering it one of the most delicious *morceaux*, when thus cooked, in the world. It must be cooked, however, in the open air, by a wood fire kindled on the ground, or by a charcoal fire in a small Boston furnace.

Clean and scale your fish, open, clean and wash him internally; take for a one-pound fish two small skewers of red cedar-wood, upon each thread a piece of fat salt pork half-an-inch square; with these fasten the belly of the fish asunder, annex him by the tail to a twig of pliant wood, which suffer to bend over the fire so as to bring the fish opposite the blaze, place a large biscuit or a slice of thin dry toast under the drip of the gravy, cook quickly—for a two-pound fish, ten minutes will suffice—dish with the biscuit under him, and eat with salt and lemon juice, or if you please, with shrimp or lobster sauce, or a dish of Worcestershire or Harvey sauce, though I think these, for my own cheek, bad taste.

TROUT AU NATUREL.

A large Sea Trout or Salmon Trout is to be cleansed, cooked and eaten precisely as the Salmon in my first receipt. I conceive, myself,

that any piquant or rich sauce overpowers the flavour of the fish, and should therefore be eschewed; but those who favour such things may eat him with shrimp or lobster sauce as above.

HOW TO COOK PIKE.

NOBBS' RECEIPT FOR DRESSING A PIKE.

Take your pike and open him; rub him within with salt and claret wine; save the milt, and a little of the bloody fat; cut him in two or three pieces, and put him in when the water boils; put in with him sweet marjoram, savory, thyme, or fennel, with a good handful of salt; let them boil nearly half an hour. For the sauce, take sweet butter, anchovies, horseradish, claret wine, of each a good quantity; a little of the blood, shalot, or garlic, and some lemon sliced; beat them well together, and serve him up.

SOYER'S RECEIPT FOR PIKE ROASTED.

This fish in France is found daily upon the tables of the first epicures, but the quality of the fish there appears much more delicate than here. But perhaps the reason of its being more in vogue there is, that other fish are more scarce; not being so much in use here (that is, in London), but in the country, where gentlemen have sport in catching them, they are much more thought of, and to them, perhaps, the following receipts may be the most valuable. To dress it plain it is usually baked, as follows: Having well cleaned the fish, stuff it, and sew the belly up with packthread: butter a sauté-pan, put the fish into it and place it in the oven for an hour or more, according to the size of it; when done, dish it without a napkin, and pour anchovy sauce round it; this fish, previous to its being baked, must be trussed with its tail in its mouth, four incisions cut on each side, and well buttered over.

PIKE À LA CHAMBORD.

The large fish are the only ones fit for this dish (which is much thought of in France). Have the fish well cleaned, and lard it in a

square on one side with bacon, put it in a fish-kettle, the larded side upwards, and prepare the following marinade: Slice four onions, one carrot, and one turnip, and put them in a stew-pan with six bay-leaves, six cloves, two blades of mace, a little thyme, basil, a bunch of parsley, half a pound of lean ham, and half a pound of butter; pass it over a slow fire twenty minutes, keeping it stirred; then add half a bottle of Madeira wine, a wineglassful of vinegar, and six quarts of broth; boil altogether an hour, then pass it through a sieve, and pour the liquor into the kettle over the fish: set the fish on the fire to stew for an hour or more, according to the size, but take care the marinade does not cover the fish, moisten the larded part now and then with the stock, and put some burning charcoal on the lid of the kettle; when done, glaze it lightly, dish it without a napkin, and have ready the following sauce: put a pint of the stock your fish was stewed in (having previously taken off all the fat) into a stew-pan, with two glasses of Madeira wine, reduce it to half, then add two quarts of brown sauce, keep it stirred over the fire till the sauce adheres to the back of the wooden spoon, then add the roes of four carp or mackerel (cut in large pieces, but be careful not to break them), twenty heads of very white mushrooms, twenty cockscombs, twelve large quenellings of whiting, and finish with a tablespoonful of essence of anchovies and half a one of sugar, pour the sauce round the fish, arranging the garniture with taste, add twelve crawfish to the garniture, having previously taken off all the small claws; serve very hot.

This dish, I dare say, will be but seldom made in this country, on account of its complication, but I thought proper to give it on account of the high estimation in which it is held in France; I must, however, observe, that I have omitted some of the garniture which would make it still more expensive, and if there should be any difficulty in getting what remains, the sauce is very good without.

PIKE EN MATELOTE.

Stuff and bake the fish as before; when done, dress it without a napkin, and pour a sauce matelote in the middle and round the fish, and serve very hot. Or the fish may be stewed as in the last.

PIKE À LA HOLLANDAISE.

Boil the fish in salt and water, in the same manner as Cod-fish; drain it well, dish it without a napkin, pour a sauce Hollandaise over it.

SMALL PIKE À LA MEUNIÈRE.

Crimp a small Pike—it must not weigh more than two pounds, but smaller if you can get it—and proceed exactly as for Sole à la meunière, but allow it more time.

PIKE WITH CAPER SAUCE.

Boil the fish as before, and have ready caper sauce made as follows: Put fifteen tablespoonfuls of melted butter in a stew-pan, and when it boils add a quarter of a pound of fresh butter; when it melts, add two tablespoonfuls of liaison; let it remain on the fire to thicken, but do not let it boil; moisten with a little milk if required, then add two tablespoonfuls of capers, and pour over the fish.

PIKE À LA MAÎTRE D'HÔTEL.

Boil the fish as usual, and dish it without a napkin; then put twelve tablespoonfuls of melted butter in a stew-pan; and when it is upon the point of boiling, add a quarter of a pound of Maître d'Hôtel butter, and when it melts pour over and round the fish; serve very hot.

PIKE À LA ÈGYPTIENNE.

Cut two onions, two turnips, one carrot, one head of celery, and one leek into slices; put them into a large stew-pan with some parsley, thyme, bay leaves, and a pint of port wine; then have your fish ready trussed, with its tail in its mouth; put it into the stew-pan, with the vegetables; add three pints of broth, and set it on a slow fire to stew, with some live charcoal upon the lid; try when done by running the knife close in to the back bone; if the meat detaches easily, it is done; take it out, and place on a baking sheet; dry it with a cloth, then egg and bread-crumb it; put it in the oven, and salamander it a light brown; then put twenty tablespoonfuls of white sauce in a stew-pan,

with eight of milk, and reduce it five minutes; then add four gherkins, the whites of four hard-boiled eggs, and two ruffles, cut in very small dice; finish with two tablespoonfuls of essence of anchovies, the juice of half a lemon, and four pats of butter; dress the fish without a napkin, and sauce over.

FILLETS OF PIKE EN MATELOTE.

If for a dinner for twelve, fillet four small Pike; egg and bread-crumb, and fry in oil; dish them round on a border of mashed potatoes (previously cutting each fillet in halves), and serve sauce matelote in the centre.

FILLETS OF PIKE À LA MEUNIÈRE.

Fillet four Pike as above, cut each fillet in halves, rub some chopped shalot into them, dip them in flour, broil them; when done, sauce as for Sole à la meunière. Observe, if you happen to live in the country, where Pike is plentiful, you may dish the fillets in as many ways as Soles, or any other fish; but I have omitted giving them here, thinking it useless to fill a useful book with so many repetitions; we have several ways of dressing Pike to be eaten cold in France, which I have also omitted, as they would be quite useless in this country.

HOW TO COOK PERCH.

The best mode of cooking a Perch, under a pound weight, is by broiling it.

Small Perch will serve to make water-souchy thus: Scale, gut, and wash your Perch; put salt in your water; when it boils put in the fish, with an onion cut in slices, and separate it into rings; a handful of parsley, picked and washed clean; put in as much milk as will turn the water white; when your fish are done enough, put them in a soup dish, and pour a little of the water over them, with the parsley and the onions; then serve them up with parsley and butter in a boat.

Large Perch may be crimped and boiled in the same way.

SOYER'S RECEIPT FOR PERCH À LA HOLLANDAISE.

Have three middling-sized fishes ready prepared for cooking ; then put two ounces of butter, two onions (in slices), one carrot (cut small), some parsley, two bay-leaves, six cloves, and two blades of mace in a stew-pan ; pass it five minutes over a brisk fire, then add a quart of water, two glasses of vinegar, one ounce of salt, and a little pepper ; boil altogether a quarter of an hour, and pass it through a sieve into a small fish-kettle ; then lay the fishes into it, and let them stew twenty or thirty minutes over a moderate fire ; dress them on a dish without a napkin, and pour sauce Hollandaise over them.

PERCH À LA MAÎTRE D'HÔTEL.

Prepare and cook your fish as above ; then put twenty tablespoonfuls of melted butter in a stew-pan, and when it is upon the point of boiling, add a quarter of a pound of Maître d'Hôtel butter, and pour the sauce over the fish, which dress on a dish without a napkin.

SMALL PERCHES EN WATER SOUCHET.

Cut four small fishes in halves, having previously taken off all the scales, and proceed precisely as for Flounders en water souchet.

SMALL PERCHES FRITS AU BEURRE.

Scale and well dry six Perches, and make incisions here and there on each side of them ; then put a quarter of a pound of butter into a sauté-pan, season your fishes with pepper and salt, put them in the sauté-pan and fry them gently, turning them carefully ; when done, dress them on a napkin, garnish with parsley, and serve without sauce.

In my opinion, they are much better cooked in this way than boiled or stewed ; large fish may also be done this way, but they require more butter, and must cook very slowly.

HOW TO COOK CARP.

IZAAK WALTON'S RECEIPT.

But first, I will tell you how to make this Carp, that is so curious to be caught, so curious a dish of meat as shall make him worth all your labour and patience. And though it is not without some trouble and

charges, yet it will recompense both. Take a Carp—alive if possible; scour him, and rub him clean with water and salt, but scale him not; then open him, and put him with his blood and liver, which you must save when you open him, into a small pot or kettle; then take sweet marjoram, thyme, or parsley, of each a handful; a sprig of rosemary, and mother-of-savory; bind them into two or three small bundles, and put them to your Carp, with four or five whole onions, twenty pickled oysters, and three anchovies. Then pour upon your Carp as much claret wine as will only cover him; and season your claret well with salt, cloves, and mace, and the rind of oranges and lemons. That done, cover your pot, and set it on a quick fire till it be sufficiently boiled. Then take out the Carp, and lay it with the broth into the dish, and pour upon it a quarter of a pound of the best fresh butter, melted and beaten with a half-a-dozen spoonfuls of the broth, the yolks of two or three eggs, and some of the herbs shred; garnish your dish with lemons, and so serve it up, and much good to you.

SOYER'S RECEIPT FOR CARP EN MATELOTE.

Have your fish ready cleaned, and make four or five incisions on each side; then put two sliced onions, three sprigs of thyme and parsley, and half-a-pint of port wine in a stew-pan, or small fish-kettle; season the fish with pepper and salt, lay it in a stew-pan, add four pints of broth, and place it on a slow fire to stew for an hour (which will be sufficient for a fish of five pounds' weight), or more, in proportion to the size; when done, dress it on a dish, without a napkin; drain it well, and serve a matelote sauce over it; only use some of the stock from the fish (having previously taken off all the fat) instead of plain broth, as directed in that article.

CARP À LA GENOISE.

Prepare your fish as above, and lay it in your fish-kettle, with two ounces of salt, half a bottle of port wine, two onions, two turnips, one leek, one carrot (cut in slices), three bay-leaves, six cloves, two blades of mace, and a sprig of parsley, cover the fish with white broth; stew it as before, dress it without a napkin, prepare a sauce Genoise and pour over it.

STEWED CARP À LA MARQUISE.

Cook the fish as above, and when done, dress it on a dish without a napkin, and have ready the following sauce: Put twenty tablespoonfuls of white sauce in a stew-pan, reduce it over a fire until rather thick, then add a gill of whipt cream, two tablespoonfuls of capers, and two of chopped gherkins; pour over the fish, then sprinkle two tablespoonfuls of chopped beet-root over it, and serve.

CARP WITH CAPER SAUCE.

Cook the fish as above, and dress it without a napkin; then put twenty-five tablespoonfuls of melted butter into a stew-pan, and when nearly boiling add a quarter of a pound of fresh butter; stir it till the butter melts, then add four tablespoonfuls of capers, and pour over. This sauce must be rather thick.

CARP FRIED.

Open the fish down the back with a sharp knife from the head to the tail, cutting off half the head, so that the fish is quite flat; break the back-bone in three places, but allow the roe to remain; then dip the fish in flour, and fry it in hot lard; dress it on a napkin, garnish with parsley, and serve plain melted butter, well seasoned, in a boat.

HOW TO COOK EELS.

EELS FRIED.

Cut the Eels in pieces about three inches long, dip them in flour, egg and bread-crumb, and fry them in very hot lard, dress them on a napkin, garnish with parsley, and serve shrimp sauce in a boat.

EELS À LA TARTARE.

Cut the Eels and fry as above, have ready some Tartare sauce upon a cold dish, lay the Eels upon it and serve immediately; should the Eels be large, they must be three-parts stewed before they are fried; dry them upon a cloth previous to bread-crumbing them.

SPITCHCOCKED EELS.

Take the bones out of the Eels by opening them from head to tail, and cut them in pieces about four inches long, throw them into some flour, then have ready upon a dish about a couple of handfuls of bread-crumbs, a tablespoonful of chopped parsley, a little dried thyme, and a little cayenne pepper, then egg each piece of Eel and bread-crumb them with it, fry them in very hot lard, dish them on a napkin, and serve shrimp sauce in a boat.

STEWED EELS.

Cut the Eels in pieces as before, and tie each piece round with packthread, then put them into a stew-pan with an onion, a tablespoonful of white wine, three cloves, three whole allspice, a bunch of parsley, thyme, and bay-leaf, and a little white broth, sufficient to cover them; place them over a moderate fire, and let them stew gently for half an hour or more, if required (according to the size of the Eel), take them out, drain them on a napkin, dish them without a napkin, and have ready the following sauce: Put a teaspoonful of chopped onions into a stew-pan with four tablespoonfuls of white wine, and eight ditto of brown sauce, let boil it gently for a quarter of an hour, keeping it stirred, then add a teaspoonful of essence of anchovies and a little sugar, and pour over your Eels.

EELS EN MATELOTE.

Stew the Eels as above, dress them without a napkin, and pour a sauce matelote over them. They may also be served with a sauce à la Beyrout.

HOW TO COOK SHAD.

BROILED SHAD.

Scale, clean, cut off the head and fins, split down the back, broil quickly over a charcoal fire; boil the roe separately in the same manner; serve on a hot dish, garnished with the roe and dried parsley. Eat with drawn butter, anchovy, or shrimp sauce.

TO BOIL SHAD.

Scale, open, clean, and wash your fish ; boil him quickly, wrapped in a napkin, in boiling water ; serve upon a napkin, garnished with fried parsley ; eat with caper sauce.

SEA-SHORE RECEIPT FOR ROASTED SHAD.

Split your fish down the back after he is cleaned and washed, nail the halves on shingles or short board ; stick them erect in the sand round a large fire ; as soon as they are well browned, serve on whatever you have got ; eat with cold butter, black pepper, salt, and a good appetite.

This is a delicious way of cooking this fine fish.

HOW TO COOK TAUTOG.

Clean, score, and boil your Black Fish quickly ; lay it in a stew-pan, with a bottle of port wine, two sliced onions, six or seven cloves, and a few pepper-corns ; add an shalot and some cayenne ; pour in a quart of weak veal broth, stew gently for an hour.

HOW TO COOK SQUETEAQUE.

Boil when cleaned, and serve with shrimp sauce, precisely as Salmon or Trout.

HOW TO COOK SEA BASS.

BOILED.

Boil plain, as above ; serve with shrimp sauce, caper sauce, or parsley and butter.

BROILED.

Broil quickly over a charcoal fire ; serve with matelote sauce, as follows :

SAUCE MATELOTE.

Peel about twenty button onions, then put a teaspoonful of powdered sugar in a stew-pan, place it over a sharp fire, and when melted and getting brown, add a piece of butter the size of two walnuts, and your onions, pass them over the fire until rather brown; then add a glass of sherry, let it boil, then add a pint of brown sauce and ten spoonfuls of consommé, simmer at the corner of the fire until the onions are quite tender, skim it well; then add twenty small quenelles, ten heads of mushrooms, and a teaspoonful of essence of anchovies, one of catsup, one of Harvey sauce, and a little cayenne pepper. Serve where directed.

HOW TO COOK KING-FISH.

Boil over a quick fire, serve plain, eat with anchovy or shrimp sauce.

Fry in olive oil, serve plain, eat with salt and red pepper.

HOW TO COOK SHEEP'S-HEAD.

Rub it over with salt and lemon before putting it in the water. To every six quarts of water add one pound of salt. Boil a ten-pound fish about twenty minutes. Serve on a napkin, garnish with parsley, eat with shrimp or lobster sauce.

HOW TO COOK HALIBUT.

SOYER'S RECEIPT FOR HALIBUT TO BOIL.

A Halibut must be well rubbed over with salt and lemon before it is put in the water; have ready a large Halibut-kettle half full of cold water, and to every six quarts of water, put one pound of salt, lay the fish in and place it over a moderate fire: a Halibut of eight pounds may be allowed to simmer twenty minutes or rather more; thus it will be about three-quarters of an hour altogether in the water; when it begins to crack very slightly, lift it up with the drainer, and cover a

clean white napkin over it; if you intend serving the sauce over your fish, dish it up without a napkin; if not, dish it upon a napkin and have ready some good sprigs of double parsley to garnish it with, and serve very hot.

HALIBUT À LA CRÈME.

Cook the Halibut as above, and dish it without a napkin (but be careful that it is well drained before you place it on the dish, and absorb what water runs from the fish with a napkin, for that liquor would spoil your sauce, and cause it to lose that creamy substance which it ought to retain; this remark applies to all kinds of fish that is served up with the sauce over it); then put one pint of cream on the fire in a good-sized stew-pan, and when it is nearly simmering add half-a-pound of fresh butter, and stir it as quickly as possible until the butter is melted, but the cream must not boil; then add a liaison of three yolks of eggs, season with a little salt, pepper, and lemon-juice, pour as much over the Halibut as will cover it, and serve the remainder in a boat; or if not approved of, dish the fish on a napkin, garnish with parsley, and serve the sauce in a boat. This sauce must not be made until the moment it is wanted.

HALIBUT SAUCE HOMARD.

Cook the Halibut as before, then take an ounce of lobster spawn and pound it in a mortar with a quarter of a pound of fresh butter, rub it through a hair sieve with a wooden spoon upon a plate; have ready a pint of good melted butter nearly boiling, into which put the red butter, and season with a teaspoonful of essence of anchovy, a little Harvey sauce, cayenne pepper, and salt, then cut up the flesh of the lobster in dice and put in the sauce; serve it in a boat very hot.

HALIBUT À LA HOLLANDAISE.

Cook the Halibut as before, and dish without a napkin; then put the yolks of four eggs in a stew-pan with half-a-pound of fresh butter, the juice of a lemon, half a teaspoonful of salt, and a quarter of one of white pepper; set it over a slow fire, stirring it the whole time quickly; when the butter is half melted take it off the fire for a few seconds (still keeping it stirred), till the butter is quite melted, then place it

again on the fire till it thickens, then add a quart of melted butter, stir it again on the fire, (but do not let it boil, or it would curdle and be useless), then pass it through a tammie into another stew-pan, make it hot in the bain-marie, stirring all the time; pour it over the fish or serve in a boat. The sauce must be rather sharp; add more seasoning if required.

HALIBUT À LA MAZARINE.

Cook the fish as above, then have all the spawn from two fine hen-lobsters; if not sufficient, get some live spawn from the fishmonger's, making altogether about two ounces; pound it well in the mortar and mix it with half-a-pound of fresh butter, rub it through a hair sieve, place it upon ice until firm, then put it in a stew-pan with the yolks of four eggs, a little pepper, half a teaspoonful of salt, and four table-spoonfuls of lemon-juice, place it over the fire and proceed as for the sauce Hollandaise, adding the same quantity of melted butter, and two teaspoonfuls of essence of anchovy, pass it through a tammie into a clean stew-pan to make it hot, dish the fish without a napkin, soaking up the water in the dish with a clean cloth, and pour the sauce over it; be careful the sauce does not boil, or it will curdle.

This dish is one of the most elegant, and is the best way of dressing a Halibut; for I have always remarked that, notwithstanding its simplicity, it has given the greatest satisfaction, both for its delicateness and appearance, causing no trouble—only requiring care.

HALIBUT EN MATELOTE NORMANDE.

Procure a smallish Halibut, one weighing about ten pounds would be the best; cut off part of the fins, and make an incision in the back, butter a sauté-pan (large enough to lay the Halibut in quite flat), and put three tablespoonfuls of chopped shalots, three glasses of sherry or Madeira, half a teaspoonful of salt, a little white pepper, and about half-a-pint of white broth into it, then lay in the Halibut and cover it over with white sauce, start it to boil over a slow fire, then put it into a moderate oven about an hour, try whether it is done with a skewer; if the skewer goes through it easily it is done, if not, bake it a little longer, then give it a light brown tinge with the salamander, place the fish upon a dish to keep it hot, then put a pint of white sauce in the sauté-pan and boil it fifteen minutes, stirring it all the time, then pass

it through a tammie into a clean stew-pan, and add a little cayenne pepper, two tablespoonfuls of essence of anchovies, two dozen of oysters (blanched), two dozen of small mushrooms, two dozen quenelles, six spoonfuls of milk, a teaspoonful of sugar, reduce it till about the thickness of bechamel sauce, then add eight tablespoonfuls of cream and the juice of a lemon, pour over the Halibut ; have ready twenty corûtons of bread cut triangularly from the crust of a French roll, and fried in butter ; place them round the dish and pass the salamander over it and serve.

HALIBUT EN MATELOTE VIÈRGE.

Boil a Halibut as before, dish it up without a napkin, and have ready the following sauce : Chop two onions very fine and put them in a stew-pan with four glasses of sherry, a sole cut in four pieces, two cloves, one blade of mace, a little grated nutmeg, some parsley, and one bay-leaf ; boil altogether five minutes, then add a quart of white sauce, boil twenty minutes, stirring all the time, then put a tammie over a clean stew-pan, and colander over the tammie, pass the sauce, take the meat off the sole and rub it through the tammie with two spoons into the sauce, add half a pint of broth, boil it again until it is rather thick, season with a teaspoonful of salt, one of sugar, the juice of a lemon, and finish with half-a-pint of cream whipt, mix it quickly and pour over the fish ; garnish with white-bait and fried oysters (that have been egged and bread-crumbed), or if there is no white-bait, smelts will do.

HALIBUT À LA RÉLIGIEUSE.

Dress the Halibut as before, and cover with Hollandaise sauce ; chop some Taragon chervil, and one French truffle, which sprinkle over it ; garnish with hard-boiled eggs cut in four lengthwise and laid round.

HALIBUT À LA CRÈME (GRATINÉ).

Put a quarter of a pound of flour in a stew-pan, mix it gently with a quart of milk, be careful that it is not lumpy, then add two shalots, a bunch of parsley, one bay-leaf, and a sprig of thyme tied together, for if put in loose it would spoil the colour of your sauce (which should be quite white), then add a little grated nutmeg, a teaspoonful of salt and a quarter ditto of pepper, place it over a sharp fire and stir it the whole

time, boil it till it forms rather a thickish paste, then take it off the fire and add half-a-pound of fresh butter and the yolks of two eggs, mix them well into the sauce and pass it through a tammie, then having the remains of a Halibut left from a previous dinner, you lay some of the sauce on the bottom of a dish, then a layer of the Halibut, without any bone, season it lightly with pepper and salt, then put another layer of sauce, then fish and sauce again until it is all used, finishing with sauce; sprinkle the top lightly with bread-crumbs and grated Parmesan cheese; put it in a moderate oven half-an-hour, give it a light brown colour with the salamander, and serve it in the dish it is baked in.

HALIBUT À LA POISSONIÈRE.

Boil a Halibut as before, and take it up when only one-third cooked, then put in a large sauté-pan or baking-sheet forty button onions peeled and cut in rings, two ounces of butter, two glasses of port wine, the peel of half a lemon, and four spoonfuls of chopped mushrooms, then lay in the Halibut, and cover with a quart of brown sauce, set it in a slow oven for an hour, then take it out and place it carefully on a dish, place the fish again in the oven to keep it hot, then take the lemon-peel out of the sauce and pour the sauce into a stew-pan, reduce it till rather thick, then add twenty muscles (blanched), twenty heads of mushrooms, and about thirty fine prawns; when ready to serve add one ounce of anchovy butter, a tablespoonful of sugar, and a little cayenne pepper, stir it in quickly, but do not let it boil; pour the sauce over the fish, and serve very hot.

HALIBUT À LA CRÈME D'ANCHOIS.

Boil the Halibut and dish it without a napkin, then pour the following sauce over it and serve immediately: Put a quart of melted butter into a stew-pan, place it on the fire, and when nearly boiling add six ounces of anchovy butter, and four spoonfuls of whipt cream, mix it quickly, but do not let it boil; when poured over the fish sprinkle some chopped capers and gherkins over it.

SMALL HALIBUT À LA MEUNIÈRE.

Crimp the Halibut by making incisions with a sharp knife, about an inch apart, in the belly part of the fish, then rub two tablespoonfuls of

chopped onions and four of salt into the incisions, pour a little salad oil over it, and dip it in flour, then put it on a gridiron a good distance from the fire—the belly downwards—let it remain twenty minutes, then turn it by placing another gridiron over it, and turning the fish over on to it, place it over the fire for about twenty-five minutes, or longer if required; when done place it upon a dish and have ready the following sauce: Put six ounces of butter in a stew-pan, with ten spoonfuls of melted butter, place it over the fire, moving the stew-pan round when very hot, but not quite in oil, add a liaison of two yolks of eggs, a little pepper, salt, and the juice of a lemon, mix it quickly, and pour over the fish; serve directly and very hot. The fish must be kept as white as possible. For the above purpose the Halibut should not exceed eight pounds in weight.

HALIBUT À LA GRATIN PROVENÇALE.

This dish is made from fish left from a previous dinner. Put two tablespoonfuls of chopped onions, and two of chopped mushrooms into a stew-pan with two tablespoonfuls of salad oil; place it over a moderate fire five minutes, stirring it with a wooden spoon; then add three pints of brown sauce, and reduce it one-third, then add a clove of scraped garlic, a teaspoonful of Harvey sauce, one of essence of anchovy, a little sugar, a little cayenne, and two yolks of eggs, pour a little sauce on the dish you serve it on, then a layer of fish lightly seasoned with pepper and salt, then more sauce and fish again, finishing with sauce; sprinkle bread-crumbs over it and place it in a moderate oven half-an-hour, or till it is very hot through, brown it lightly with the salamander and serve very hot. The garlic may be omitted if objected to, but it would lose the flavour from which it is named.

HOW TO COOK WHITINGS.

SOYER'S RECEIPT FOR WHITINGS, TO FRY THEM.

Every person knows the delicacy of this fish, and its lightness as food, especially invalids; it is generally well received at all tables: to fry them well, dry them in a cloth, then throw them in flour, egg and

bread-crumb, fry them in hot lard, observing the directions for frying Soles; serve them on a napkin with shrimp sauce in a boat, and garnish with parsley.

WHITING AU GRATIN.

Have the Whitings skinned, with their tails turned into their mouths; butter a sauté-pan and put in the Whitings, with a tablespoonful of chopped onions and four tablespoonfuls of brown sauce over each; sprinkle bread-crumbs over them, and a little clarified butter, and put them in a moderate oven half-an-hour; take them out and dress them on a dish without a napkin; then put twelve tablespoonfuls more brown sauce into the sauté-pan, with a teaspoonful of chopped mushrooms, one ditto chopped parsley, one ditto essence of anchovy, a little pepper, salt, and sugar, boil ten minutes, pour round the fish, and pass the salamander over them.

WHITINGS BROILED.

Have the fish skinned and curled round, flour it, and lay it on the gridiron over a moderate fire; it will take about twenty minutes; dish it on a napkin, garnish with parsley, and serve plain melted butter in a boat. Season when near done.

WHITINGS BOILED À LA MAÎTRE D'HÔTEL.

Broil the fish as above, dish them without a napkin, have six tablespoonfuls of melted butter in a stew-pan, put it on to boil, then add two ounces of Maître d'Hôtel butter, stir it till it is melted, but do not let it boil, and pour over the fish.

FILLETS OF WHITINGS FRIED.

Take the fillets of six small Whitings which have not been skinned, dip them in flour, egg and bread-crumb them, and fry in very hot lard; garnish with fried parsley, and serve with sauce Hollandaise in a boat.

FILLETS OF WHITINGS À LA HOLLANDAISE.

Fillet six Whitings as above, cut them in halves, then butter a sauté-pan, and lay in the fillets, skin side downwards; season with a little pepper, salt, and lemon-juice, place them over a slow fire five minutes,

turn them and place them again on the fire; when done, dish them round on a dish, and pour some sauce Hollandaise over them.

FILLETS OF WHITINGS À L'ITALIENNE.

Fillet and dress the fish as in the last, adding chopped parsley to the seasoning, and make the sauce as for Filets de Soles à l'Italienne.

WHITING À L'HUILE.

Fry the Whiting in very hot salad oil, instead of lard, of a very light brown colour; dish it on a napkin, garnish with fried parsley, and serve shrimp sauce in a boat.

THE END.

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